

Free Software at Schools

Installing and Maintaining a Skolelinux/Debian-edu Network

Based on Debian Sarge, prerelease pr05

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Free Software at Schools: Installing and Maintaining a Skolelinux/Debian-edu Network; Based on Debian Sarge, prerelease pr05

by Klaus Ade Johnstad

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Note: There is currently no author approved translation of this document.

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Start

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Added Smartboard and some notes on Munin.

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Preface

This document is written mainly because nobody else did it, and because it had to be done.

This document is *NOT* a general Linux book. It is not a document about Linux, but about Skolelinux/Debian-edu. You must supplement reading this document with material from Section 1.5.

Warning

You use this document at your own risk! It is to be considered a constant work-in-progress.

Note: There is currently no author approved translation of this document.

The Strategy Behind Writing This Document

This document contains a rather large amount of screenshots, simply because I like to write according to the saying "A picture can say more than a 1000 words."

To-do

The main focus of this Sarge based version of the Newdriftbok, is to make sure all that is written in the Woody based (<http://www.skolelinux.no/~klaus/newnotater/>) version still functions. The second focus is to include new material that newer made it into the Woody version of this document, then to include totally new thing that wasn't (easy) available for the Woody release of Debian, such as FreeNX, Lessdisks, Ltsp5, OpenOffice.org 2.0 etc. There will be a list toward the end of the document listing some items that will be included in future versions of this document. See todo-list

Contributions to This Document

I don't intend, nor do I have the time, to maintain this document alone, please read the chapter on how to contribute, by translating, fixing typos, code cleanup, etc

Chapter 1. Where and How to Get Help

1.1. Mailing lists Belonging to the Skolelinux/Debian-edu Project

Sometimes when you are really stuck, and have no idea how to solve your problem, or maybe you don't even know how to formulate your problem, then it can be very comforting to know that there are several mailing lists out there dedicated to helping you.

There are various mailing lists out there, targeted at different types of users, and in different languages. Have a look at the web page <http://developer.skolelinux.no/maillinglister.html>

Have a look at 9 for help on setting up and configuring the mail client KMail.

1.2. IRC Chat Channel Skolelinux/Debian-edu

Another place to get help is via IRC, channel: #debian-edu (IRCnet (irc.pvv.ntnu.no, irc.ifi.uio.no, irc.uib.no)).

Have a look at Section 1.2 for help on setting up and configuring the an IRC-client.

1.3. Inviting a Skolelinux/Debian-edu Knowledgeable Person into Your Computer

Note: The two ways

```
ssh -l help localhost  
ssh help@localhost
```

are equal.

As long as your Skolelinux/Debian-edu computer has network connection, it possible for someone else to remotely login to your computer with SSH and help you.

First you need to create a user. Refer to Chapter 11 for creating one. In the following, I assume that this newly-created user for this purpose has the username **sshhelp**. On the machine where your helping hand is logged in, you must also be able to login. Your helping hand must supply you with a username for this purpose; I will assume this username is **helper**. If the person that is going to help you is logged into a machine with the IP number **127.217.148.238**, then you use the command

ssh helper@127.217.148.238 -R 2100:localhost:22

to setup and start an SSH tunnel on port 2100. Your helping hand can use this SSH tunnel to log into your Skolelinux/Debian-edu machine and help you. Now after you have started the SSH tunnel with the command above, your helper will be able to login to your machine with this command issued on his machine

ssh -p 2100 sshhelp@localhost

It's normal that you see something like this the first time you connect to a machine via SSH:

```
The authenticity of host 'bla bla (bla.bla)' can't be established.  
RSA key fingerprint is 32:0e:ef:60:f9:26:41:78:75:10:56:a4:29:23:0a:3e.  
Are you sure you want to continue connecting (yes/no)?
```

Just answer **yes** here.

Please have a look at the manual page for SSH, **man ssh**, or write **man:ssh** in the address field in the browser/file manager Konqueror, so that you understand the different options used in the commands above. If you are reading this document online with Konqueror then just click here [man:ssh](#)

1.4. Permanent Backdoor into a Skolelinux/Debian-edu Machine with a SSH Tunnel

There are places where the one in charge of the network is not you, and where this someone who is in charge of the network has blocked incoming SSH connections. If we could login to our server from anywhere, then our life as administrator would be very comfortable indeed. To overcome such showstoppers in the network, we have included in Skolelinux/Debian-edu a script, that sets up an SSH tunnel, similar to the one in Section 1.3, but with an added feature; no need for a helper on the other side, the script handles this for us. This script is located in the package `debian-edu-config` and once this package is installed, the script is found in `/etc/init.d/open-backdoor`. This script needs some information from you to run correctly:

```
RPORT=this is the port that you will be using on the remote machine that you use.  
RHOST=this is the DNS name, or IP number to the remote machine that you use.  
RUSER=this is the username on the remote machine that you use.
```

If we take the values from Section 1.3, the script will look like this:

```
RPORT=2100  
RHOST=127.217.148.238  
RUSER=help
```

When you have supplied the necessary parameters RPORT, RHOST and RUSER, you need to setup and configure the necessary SSH keys for the script, so that the script can setup the SSH tunnel automatically for you, without the intervention by a helping hand in Section 1.3. You must login as the user root on the machine where the backdoor-script is running; this can be a server, workstation or thin client server- your choice. Then you must run the command

ssh-keygen -t dsa

```
tjener:~#ssh-keygen -t dsa
Generating public/private dsa key pair.
Enter file in which to save the key (/root/.ssh/id_dsa):
Created directory '/root/.ssh'.
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /root/.ssh/id_dsa.
Your public key has been saved in /root/.ssh/id_dsa.pub.
The key fingerprint is:
81:12:31:b9:04:1c:d0:da:23:1a:72:56:38:87:12:a5 root@tjener.intern
```

When asked for a passphrase, just leave that empty and when asked for file to save key on just press **Enter** accepting the default. After you have generated the SSH keys, you must transfer the public part of this key to the machine on the outside, and on this machine place it in the file `.ssh/authorized_keys`. Make sure you do this in a safe way, *not* via a Hotmail account. The best would be to use the SSH equivalent **scp**. You achieve this with the commands from the machine with the backdoor-script running, where you just generated the SSH keys, issue the command

ssh-copy-id -i /root/.ssh/id_dsa.pub RUSER@RHOST

Now, you should be able to start the backdoor script with the command `/etc/init.d/open-backdoor start`, and with the command

ssh -p RPORT RUSER@localhost

you should be able to login from the remote machine to your Skolelinux/Debian-edu machine, very comfortably.

In the above commands, you must replace the values for RPORT, RUSER and RHOST with those that apply to your situation.

Tip: Now is definitely the time to brush up your knowledge of scp, **man scp** or write **man:scp** in the address field in Konqueror.

(Man-in-the-Middle Attack)!

If you have a backdoor script running on many different Skolelinux/Debian-edu machines, then you will experience a frequent warning when trying to login to *localhost*

```

@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@      WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!      @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
It is also possible that the RSA host key has just been changed.
The fingerprint for the RSA key sent by the remote host is
ba:bc:68:4c:0b:72:4b:89:d3:04:00:c3:ab:8b:b8:98.
Please contact your system administrator.
Add correct host key in /home/klausade/.ssh/known_hosts to get rid of this me
Offending key in /home/klausade/.ssh/known_hosts:2
RSA host key for localhost has changed and you have requested strict checking
Host key verification failed

```

This is nothing to get scared about. It just means that you must delete (in this case line 2) the line in the file `/home/klausade/.ssh/known_hosts` containing *localhost*

1.5. More In-Depth Linux Documentation

There is an enormous amount of written material about every aspect concerning Linux and GNU. Online you'll find full in-depth books with +1000 pages, and shorter 1/2 DIN A4 pages. Your local bookstore should probably have at least 100 Linux relevant book titles available.

1.5.1. Documentation and Help Pages Already Installed

Almost all programs and commands on your system come with a help page. These pages are available from the command line, like **man ssh** which gives you this:

```

SSH(1)                                System General Commands Manual                                SSH(1)

NAME
  ssh - OpenSSH SSH client (remote login program)

SYNOPSIS
  ssh [-l login_name] hostname | user@hostname [command]

  ssh [-afgknqstvxACNPTX1246] [-b bind_address] [-c cipher_spec]
    [-e escape_char] [-i identity_file] [-l login_name] [-m mac_spec]
    [-o option] [-p port] [-F configfile] [-L port:host:hostport] [-R
    port:host:hostport] [-D port] hostname | user@hostname [command]

```

DESCRIPTION

ssh (SSH client) is a program for logging into a remote machine and for executing commands on a remote machine. It is intended to replace rlogin and rsh, and provide secure encrypted communications between two untrusted hosts over an insecure network. X11 connections and arbitrary TCP/IP ports can also be forwarded over the secure channel.

ssh connects and logs into the specified hostname. The user must prove his/her identity to the remote machine using one of several methods depending on the protocol version used:

They are also available graphically in Konqueror by writing in the address field `man:ssh`

Figure 1-1. Help Pages in Konqueror

manual page for ssh in Konqueror

1.5.2. This Document as a pdf-File

The html document that you are currently reading is also available in other formats, including pdf and plain text.

The document as plain text (<http://www.skolelinux.no/~klaus/sarge/newdriftbok.sarge.en.txt>)

The document as a pdf-file. (<http://www.skolelinux.no/~klaus/sarge/newdriftbok.sarge.en.pdf>)

The document as one long html-file. (<http://www.skolelinux.no/~klaus/sarge/newdriftbok.sarge.en.html>)

1.5.3. Skåne Sjælland Linux User Group, Friheden til at skrive bøger(Freedom to Write Books)

This is a Danish Linux User Group,(LUG - Linux User Group). They have about 1830 pages of very well-written Linux documentation- all in Danish. All of these pages can be downloaded or read online in various formats, such as html, ps, pdf, Palm Pilot.

These pages are organised into 15 different books; all available from *Skåne Sjælland Linux User Group* (<http://www.linuxbog.dk>)

1.5.4. The Linux Documentation Project

More in-depth books and guides are located in "The Linux Documentation Project"- all in English, as well as other languages.

The Linux Documentation Project (<http://www.tldp.org/>)

Tip: A lot of already available documentation is ready to be installed on your Skolelinux/Debian-edu machine. Have a look at what is available with

apt-cache search ldp

and also

apt-cache search documentation | more

scroll down the list with the spacebar, and install what you find interesting with the command

apt-get install packagename

if I wanted to install the package doc-linux-html I would issue the command

apt-get install doc-linux-html

look at section Section 8.9 for more on how to install additional packages

1.5.5. Manuals for OpenOffice.org

The Norwegian Board of Education (L  ringssenteret) have published small, handy manuals, in Norwegian for the different components of OpenOffice.org, such as Writer, Impress, Calc, Draw and the HTML-editor.

These manuals can be downloaded individually, or together (211 pages), from the Board of Education's web page at *OpenOffice.org user manual*
(<http://skolenettet.ls.no/imaker?id=171547&malgruppe=0&trinn=0&omr=153&mal=snarvei>)

Tip: This kind of OpenOffice.org material also exists in your language.

1.5.6. LTSP, Linux Thin Client Server Project(LTSP)

The cornerstone to a well-functioning Skolelinux/Debian-edu is the thin client. In order to get these thin clients running smoothly, there is a good piece of documentation, which is already translated into several languages, *Linux Terminal Server Project* (<http://www.ltsp.org/documentation/index.php>)

Chapter 2. Getting the "Right" Hardware

Skolelinux/Debian-edu Friendly Suppliers

There are suppliers of new and used hardware, tested with and sold pre-installed with Skolelinux/Debian-edu. This means that, for a small amount of money, you can save a lot of time fiddling with incompatible hardware, and spend more time on improving Skolelinux/Debian-edu. One such supplier in Norway is *In/Out* (<http://www.inout.no/skolelinux>)

2.1. Firewall/Router

Warning

The latest and final version of Coyote Linux is 2.24

The Coyote Linux Floppy Firewall Development has been discontinued, see *Coyote Linux Floppy Firewall Development Discontinued* (<http://www.coyotelinux.com/news.php?article=202>)

Note that it is the `_floppy_` version of Coyote Linux that is discontinued, there will be a replacement based on installation to harddrive available instead.

A short summary on things you need to create a Coyote Linux firewall/router for Skolelinux/Debian-edu.

- Just about any old computer, anything from Pentium 133MHz¹. CPU and upward, with 16MB of RAM or more, no need for a hard drive or CD-ROM
- Two network cards, they can be type ISA or PCI. A mix is possible, 10Mbit or 100Mbit, support for 1Gbit should be available. Any type of network card supported by the Linux kernel is usable, but since there is no automatic detection of what kind of network card you are using, you must specify yourself when creating the Coyote Linux-floppy which drivers your network card uses. This means that it might be a bit troublesome to use no-name network cards. Personally, I prefer to use network cards from the manufacturer 3Com, as almost all PCI network cards from them use the module *3c59x*.

Short List of Network cards I use with Success in my Coyote Linux Machines, and Their Corresponding Driver Modules:

1. 3Com509 Module:3c509
2. 3Com900 Module:3c59x
3. Intel Ethernet Pro 100 Module:eeepro100
4. 3Com590 Module:3c59x
5. RTL8139 Module:8139cp or 8139too

- 2 diskettes, preferably new and unused
- 1 crossover network cable to connect Coyote Linux via the LAN-network card to the Skolelinux/Debian-edu eth0 network card²
- A machine with a floppy drive and an Internet connection, to download Coyote Linux; this can either be a Linux machine or a Windows machine, Coyote Linux. Source files exist for Linux and Windows- both produce a workable Coyote Linux floppy.

The procedure for making this Coyote Linux floppy is similar on Linux and Windows, except that it's a command line script in Linux and a click&point thing in Windows.

- Download a copy of Coyote Linux, from *coyotelinux.com* (<http://www.coyotelinux.com>), look in the section Downloads, then look in *Coyote Linux - Floppy Firewall*

I keep a modified version of Coyote Linux on my Skolelinux/Debian-edu homepage. In that one I have set up the IP addresses correctly according to the Skolelinux/Debian-edu network. Get it from <http://www.skolelinux.no/~klaus/coyote-2.24-slx.tar.gz>

What you are looking for exists in mainly two versions, one for Linux,(*Linux Floppy Creator Scripts*),and the other one for Windows,(*Coyote Linux Windows Disk Creator*). Choose the one that suits you best- the resulting floppy will be the same.

Warning

The hardware specifications listed here are based on my own experience; yours may vary.

2.2. Main Server

The function of this profile is further described in Section 5.2

It is perfectly possible to combine different profile, to some extent, doing so naturally make the hardware requirement different than those mentioned here. Have a look at Section 2.7

The hardware specification for this profile depends mainly on how many users you have.

- You should opt for SCSI-disks, or SATA. Only use IDE-disks for small networks with few users.

The size of the disk (or the RAID) is dictated by how many users you have, and how much space you give each of them. See TODOSection 8.10

- A network card of good quality, 100Mbit or 1000Mbit
- The CPU doesn't need to be very fast- about 500-1000MHz should do fine. This profile is mainly a file server profile.
- 512MB-1GB RAM should be enough.

Warning

The hardware specifications listed here are based on my own experience; your mileage may vary.

2.3. Thin Client Server

The function of this profile is further described in TODO Section 5.2

The most important, absolutely *important* thing is plenty of high quality ECC RAM.

- The amount of RAM you need depends on how many thin clients you have, and the pattern of use, see TODO the sidebar *To-do*. The rule of thumb says 64-124MB RAM on the thin client server for each thin client you have and about 256MB for the server itself. For about 40-50 thin clients 4GB of RAM is sufficient, which is also the maximum amount of RAM that a ready-compiled Linux kernel for Skolelinux/Debian-edu supports. See TODO Section 8.4 how to install a kernel with support for up to 4GB of RAM and multiprocessor(SMP). If you have more than 4GB of RAM in your server, then you must compile your own kernel with support for that. That is not (yet) the scope of this document, but the clue is to have in your kernel config file

```
CONFIG_HIGHMEM64G=Y
```

- You definitely want to have two processors, that way one user can start a heavy process, such as Gimp, and lock up one CPU, and there will still be one easily available for the other users on the system. It's not crucial to have the fastest CPU available on the market, having two is more important.
- On a machine with the thin client server profile installed, no user data or home directories will be saved. All user data will be NFS-mounted from the machine with the profile main server. There is no need for a large disk on this machine, unless you choose to also use it as an external backup machine, see TODO the sidebar *To-do*. A 9GB disk is enough for such a machine, but it should be SCSI, because of the heavy load with many thin clients.
- You **must** have two network cards, of good quality. One card (eth0) will connect to the main server to get home directories; the other (eth1) will connect to the thin-client switch, this card should have 1000mbit speed, and the switch should have a 1000mbit uplink port.

Warning

Remember that each thin client uses about 2Mbit of network bandwidth, which means that on a 100Mbit network, you can't have more than about 50 thin clients. If you need more than that, you must get more thin client servers, or invest in a 1Gbit network. I would choose more thin client servers.

Warning

The hardware specifications listed here are based on my own experience; your mileage may vary.

2.4. The Thin Client

The function of this profile is further described in Section 5.2

- You need a machine with a video card that is possible to configure automatically, otherwise you must manually configure the video card by hand. You do not want to use old onboard ISA-based video cards- they are just trouble.
- You want to have a network card that is capable of a so-called PXE-boot. That means you won't need to make any boot floppies for the thin client, which is a bothersome thing. Boot floppies are bothersome to create, and they get lost. You need them every time you boot the thin client. With a PXE-card it's just plug&play- you turn on the machine, and that's it. PXE-network cards do cost a little bit more than normal network cards, but they're worth it, definitely.

My Experience Says....

I've too often seen that the money saved by not buying PXE-network cards, is wasted many times when trying to get ordinary network cards to work in thin clients. As a minimum, I recommend that you buy a couple of them, just to test, and to use when you just want to get a thin client up and running quickly.

If you don't have PXE-network cards, you must create boot floppies for your cards. You should first have a look at Section 8.7.3, that is a kind of universal boot floppy, with support for the 30 most common network cards. If that one doesn't work with your network card, then you can visit *rom-o-matic.com* (<http://www.rom-o-matic.com>) and follow the online instructions there for making boot floppies. These boot floppies can be created from a Windows, Linux or Mac-machine.

- You need a minimum of 32MB RAM³ in the thin client. In Skolelinux/Debian-edu there is the possibility to use swap over NFS to the thin client. This is done automatically if you add the MAC address of your thin client in `/etc/dhcp3/dhcpd.conf`. Have a look at Section 8.7.4

The option to use or not to use swap over NFS to the thin client is set in the `/opt/ltsp/i386/etc/lts.conf` look out for this

```
USE_NFS_SWAP      = Y
SWAPFILE_SIZE     = 32m
```

In this case swap over NFS is turned on, and the swapfilesize is 32MB, this swapfile is created on the thinclientserver, make sure you have enough space in the partition `/var/opt/ltsp/swapfiles`, if not have a look at Section 8.5.5 for increasing it.

- Your processor doesn't need to be faster than 100MHz.
- There is absolutely *no* need for a hard drive. It just makes noise, generates heat and uses unnecessary power. Remove it, or disable it physically.
- A floppy drive, if you want to use it in the thin client, see TODO 7
- A connector for USB, if you want to use it in the thin client, see TODO 6
- A PCI sound card, if you want to use sound on your thin client- only advisable if you have enough bandwidth available. Sound consumes plenty of bandwidth, see TODO 8

Warning

Plenty of people have wanted and tried to get the CD-ROM to work in a thin client, but without success. If you have managed to get it to work, please let me know.

2.5. Workstation

The function of this profile is further described in Section 5.2

The hardware requirement for this profile all depends on what you have available, the intended use of the machine, and how fast you want the machine to do things. Unlike the other server profiles such as main server and Thin-client server, this profile is mainly to be used by one user at a time, so making a "bad" hardware choice will only affect one user.

You will need a hard drive with a minimum size of about 1700MB plus 4 times the amount of RAM in the machine. There is no need for a big hard drive in this machine, unless you plan to use it as an external backup server TODO the sidebar *To-do*. If you do have a really big hard drive in this machine, and would like to put it to good use, you could add another lv to the machine, and use it to save big files such as video, images, ISO-images, see Section 8.5.8

Tip: If you have a rather small hard drive, but plenty of RAM, maybe as much as 940MB, then the swap partition alone would end up being almost 2GB big. If you think this is too much, then you can lower the amount of RAM that the installer sees by booting with the option

Press F1 for help, or Enter to boot:linux mem=64m

when you install Skolelinux/Debian-edu. This way the installer only sees 64MB of RAM, and will only make a 128MB big swap partition, see Figure 6-1. It is only during the first stage of installation that this low amount of RAM is seen by the system. Later all available RAM is visible and in use, but maybe you need to install a HIGHMEM-enabled kernel, see Section 8.4

Tip: It's also possible during installation to decide what size partitions the automatic partitioning will make. Have a look in directory `/etc/autopartkit/` during install, use **ALT-F2** and the editor nano to edit those files. Note: this is for advanced users only.

2.6. Laptop

The main focus of Skolelinux/Debian-edu is servers, not laptops. I suggest you have a look at plain Debian, Knoppix or any other Linux distribution.

If any other Linux distribution is out of the question, you *must* have Skolelinux/Debian-edu installed, then choose the profiles **Standalone** and **Standalone-Extra**

2.7. Combined profiles

At the moment there is 5 profiles available when installing Skolelinux/Debian-edu, see Section 5.2, some of these can be combined, some of these can *not be* combined.

2.7.1. Combi-server, mainserver+Itspserver

It's perfectly possible to combine the profiles mainserver Section 2.2 and Itspserver Section 2.3, so that you can have a fully functional Skolelinux/Debian-edu network with only two machines; combi-server Section 2.7 and a firewall/router Section 2.1. Such a combination of profiles naturally means that you need two networkcards, and plenty of harddrive space.

2.7.2. mainserver with GUI, mainserver+workstation

If the thought of having a mainserver without a GUI, see the sidebar *GUI* scares you, then you can have it your way (with a GUI) if you install both the mainserver Section 2.2 and workstation Section 2.5

2.7.3. Not all can be combined!

Warning

Do not mix any of the network profiles (mainserver, Itspserver or workstation) with any of the standalone profiles (standalone and standalone extra)

Notes

1. These are the hardware requirements for Coyote Linux version 2.24.
22.7.2004: Support for machines without a math co-processor was removed with version 2.11
2. This assumes a small Skolelinux/Debian-edu network with only one machine on the 10.0.2/23-backbone network. For bigger installations, this crossover cable is replaced with a straight cable connected to a switch. Refer to network map at FIXME the sidebar *To-do*

The reference to 10.0.2.0/23 indicates a subnet mask format that you may not be familiar with, I will use this notation throughout this document, as it is easier, and in my opinion more practical. I will in section the sidebar *To-do* discuss this subnet mask format.
3. It's possible in theory to get it to work with as little as 12MB of RAM, but it's not advisable. It goes rather slowly.

Chapter 3. Firewall/Router for Skolelinux/Debian-edu

3.1. Hardware

A short summary of needed hardware for making Coyote Linux for Skolelinux/Debian-edu:

3.1.1. The Latest Version of Coyote Linux

Coyote Linux is a product that did undergo continuously development, with several new releases each year, it is now discontinued, see *Coyote Linux Floppy Firewall Development Discontinued* (<http://www.coyotelinux.com/news.php?article=202>). But I do feel that the last version 2.24 should be useful for quit some time.

3.2. Placement of the firewall/router in a Skolelinux/Debian-edu Network

Note: Although I keep mentioning the necessary firewall/router and Coyote Linux in the same sentences, that doesn't mean that you must use Coyote Linux for this purpose. You can use a dedicated router from any commercial manufacturer you like, or something similar to Coyote Linux such as FloppyFirewall, Gibraltar, M0n0wall, or even Debian. It's just that I personally prefer Coyote Linux. You must just remember that whatever firewall/router you use, it must be configured like A

The firewall/router has a defined role in the Skolelinux/Debian-edu network. Without it, the network will not function optimally.

Coyote Linux has two network cards, each having different roles. One network card is to be connected to the existing network, so that it gets connected to the Internet. In Coyote Linux, this network interface is called **WAN, eth1, Internet**. The other card, which is to be connected to your Skolelinux/Debian-edu network is called **LAN, eth0, LAN network**. This card is connected either directly to the Skolelinux/Debian-edu mainserver with a crossover cable (for small networks), or via a switch making a so-called 10.0.2/23-backbone network.

Warning

Don't mix up the different roles of eth0 and eth1 in Coyote Linux and Skolelinux/Debian-edu

Figure 3-1. An Overview of Placement of the firewall/router in Skolelinux/Debian-edu

Layout of small/medium network

A similar diagram with an overview of a complete Skolelinux/Debian-edu network is available in Chapter 4

3.3. Creation of a Coyote Linux Floppy

I will briefly outline this procedure on a Windows machine in Section 3.3.1

Basic Configuration of the firewall/router

- Regardless if you choose to create the Coyote Linux floppy on a Linux or Windows machine, the following configuration must be used. This also applies to any other firewall/router than Coyote Linux

A. local network interface:

```
IP Address: 10.0.2.1
Netmask:   255.255.254.0
Broadcast: 10.0.3.255
Network:   10.0.2.0
```

B. Install the Big Pond login software? [y/n]:n

Press "n"

I think this refers to some extra stuff you need if you happen to get net access from the provider Big Pond, but I'm not really sure. Anybody know?

C. Do you want to enable the Coyote DHCP-server [y/n]: n

Press "n"

Warning

Since Skolelinux/Debian-edu already has a DHCP-server running, you must disable the DHCP-server on your firewall/router, and on any other machines you want to integrate into your Skolelinux/Debian-edu-network. Having two DHCP-servers on the same network usually doesn't work very well.

D. Use 10.0.2.2 as syslog server, this ip-address is your mainserv

1. After you have downloaded the Coyote Linux source files, you need to unpack them. You must be superuser root to unpack them.

```
tar zxvf coyote-2.24.tar.gz
cd coyote
./makefloppysh
```

Note: If a new version of Coyote Linux exists at the time you read this, then you must replace the version 2.24 in the commands above with the version number you have downloaded.

2. When creating a Coyote Linux on a Linux machine, these are the questions asked, and the answers you should give:

a. Coyote floppy builder script v2.9

Please choose the desired capacity for the created floppy:

- 1) 1.44MB (Safest and most reliable but may lack space needed for some options)
- 2) 1.68MB (Good reliability with extra space) - recommended
- 3) 1.72MB (Most space but may not work on all systems or with all diskettes)

Enter selection:2

Choose here what is recommended «1.68MB»

b. Please select the type of Internet connection that your system uses.

- 1) Standard Ethernet Connection
- 2) PPP over Ethernet Connection
- 3) PPP Dialup Connection

Enter Selection:

Here you would normally choose option 1)

c. Configuring system for Ethernet based Internet connection.
By default, Coyote uses the following settings for the local network interface:

IP Address: 192.168.0.1
Netmask: 255.255.255.0

```
Broadcast: 192.168.0.255
Network:   192.168.0.0
```

```
Would you like to change these settings? [Y/N]: y
Enter local IP Address [192.168.0.1]: 10.0.2.1
Enter local Netmask [255.255.255.0]: 255.255.254.0
Enter local Broadcast [192.168.0.255]: 10.0.3.255
Enter local network number [192.168.0.0]: 10.0.2.0
```

These network settings for the local network must be changed, see A

d. If you use my version of Coyote Linux from

<http://www.skolelinux.no/~klaus/coyote-2.24-slx.tar.gz> (<http://www.skolelinux.no/~klaus/coyote-2.24-slx.tar.gz>) then you will see this screen, where the correct network values already is there:

```
IP Address: 10.0.2.1
Netmask:    255.255.254.0
Broadcast:  10.0.3.255
Network:    10.0.2.0
```

e. Does your Internet connection get its IP via DHCP? [y/n]:

Answer yes(y) or no(n), according to you network configuration.

If you do not get IP via DHCP, you need to fill in some information:

```
Please enter the information for your static IP configuration
Internet IP Address:
Internet Subnet Mask [255.255.255.0]:
Internet Broadcast [Enter = Default]:
Internet Gateway Address:
Domain Name:
DNS Server 1:

DNS Server 2 (optional):
```

f. Enter your DHCP hostname:

Normally you can leave this one blank

g. Install the Big Pond login software? [y/n]:

I think this refers to some extra stuff you need if you happen to get net access from the provider Big Pond, but I'm not really sure. Anybody know?

h. Do you want to enable the Coyote DHCP server? [y/n]: n

Here you *must* answer «n»!

i. If you don't know what a DMZ is, just answer NO
Do you want to configure a De-Militarized Zone? [Y/N]: n

Here can press just «n»

j. You now need to specify the module name and parameters for your network cards.

If you are using PCI or EISA cards, leave the IO and IRQ lines blank.

Enter the module name for you local network card:

This is the tricky part, knowing what type of driver modules to use for your network cards; even knowing what type of network cards you have is sometimes difficult. Have a look at Section 3.12 for an overview of available driver modules. Remember to not use the ending .o when writing what driver module to use.

I prefer newer cards from 3Com. Almost all of them use the driver module **3c59x**.

k. The default language of the Coyote Web Administrator is English
Do you like to configure a different language ? [Y/N]: n

Use English, it's much easier to get help, and use Google when there is a problem.

l. Syslog server address:

Here you can use the mainservers as syslog server, use 10.0.2.2.

3. You must now insert a floppy in the machine. Remember to turn the write protection off. The creation of the floppy will take a few minutes.

Warning

Make sure that you don't get any error messages related to unknown NIC modules, like this:

```
Checking module deps for (wrong,bad)...\nCopying module: drivers/wrong.o\n\nUnable to copy module (drivers/wrong.o): No such file or directory
```

Make sure you see something like this instead:

```
Checking module deps for (e100,3c59x)...\nModule 3c59x dep =\nModule e100 dep =\nCopying module: drivers/e100.o\nCopying module: drivers/3c59x.o
```

3.3.1. Creating a Coyote Linux Floppy on a Windows Machine

If you create the floppy on a Windows machine, it's almost the same procedure as with Linux.

Download the Source Files for Windows, probably from *Windows Disk Creation Wizard v2.24.0* (<http://www.coyotelinux.com/downloads/channel.php?ChannelID=5>)

Figure 3-2. Coyote Linux Windows Creator Welcome Image

Coyote Linux Windows Creator Welcome Image

Here you just press 'Next'

Figure 3-3. Local Network Setup LAN

Local Network Setup

Here you must fill in the necessary network information; see A

Filling in the correct values for IP address and Netmask will make Coyote Linux correctly calculate the values for Broadcast address and Network address

Figure 3-4. Setting a Password on the Coyote Linux Floppy

Setting password

Without this password, you can't logon your Coyote Linux machine later, see Section 3.6

Figure 3-5. Syslog Server

Setting mainserver as syslog server

Just leave this blank, or have a look at 2.1

Figure 3-6. Type of Internet Connection WAN

Internet connection

Choose whatever is most appropriate for you. If you get a DHCP-assigned address, then it is likely that you will not need to give any more information about your connection.

Figure 3-7. Static IP configuration

Static ip on WAN

If you have a static address, then fill in the appropriate values here.

Figure 3-8. Do not enable the Coyote Linux DHCP-server!

Do not enable the DHCP-server!

Do not enable the Coyote Linux DHCP-server. There is already one running on the mainserver

Figure 3-9. Choosing Driver Modules for Your Network Cards NIC

Modules for NIC's

Drag and drop to choose the correct network cards in your Coyote Linux machine.

In this particular screenshot I'm using a 3com NIC for my LAN card, and an Intel pro 100 card for my WAN card.

Figure 3-10. Choose language

Choose language

In order to best get support from the Internet, choose English.

Figure 3-11. Creating the Disk

Create the disk

Place a floppy in the floppy drive, and press 'Next'.

Tip: I strongly advise creating 2 or more floppies, it's very handy having a spare copy.

3.4. Upgrading to Newer Versions of Coyote Linux

Note: This chapter should be moved to after the introductions to available commands in Coyote Linux

Coyote Linux is a product that is in active development and maintenance, just like Skolelinux/Debian-edu. That means that new versions are released quite often, with new features and security fixes. Especially because of the security fixes, you should always use the latest stable version of Coyote Linux

Since Coyote Linux runs solely from floppy, there is no system, per se, to upgrade. You must create a totally new floppy, as in Section 3.3. To make this process as easy as possible, there are some simple things to keep in mind.

1. Finding out what kind of network cards you have: If you have forgotten what kind of network cards you use and didn't write it down somewhere, then you can use the command **lsmod** to list all loaded driver modules that are in use. Maybe that way you'll remember which network cards you have.

```
coyote# lsmod
Module                               Size  Used by
3c509                                7732    2
ip_nat_quake3                        1768    0 (unused)
ip_nat_mms                           2608    0 (unused)
ip_nat_h323                          2060    0 (unused)
ip_nat_amanda                        876     0 (unused)
ip_nat_irc                           1904    0 (unused)
ip_nat_ftp                           2384    0 (unused)
```

ip_conntrack_quake3	1848	1
ip_conntrack_mms	2704	1
ip_conntrack_h323	2065	1
ip_conntrack_egg	2280	0 (unused)
ip_conntrack_amanda	1488	1
ip_conntrack_irc	2672	1
ip_conntrack_ftp	3440	1

In this listing of loaded modules you see that the network card 3Com509 is in use, twice. For a list of supported modules, look in Section 3.12

It would be best to write down somewhere what network cards you use in the machine.

2. What kind of port forwarding do you have?

Information about your port forwarding rules, if you have made any, is in the file

`/etc/coyote/portforwards`

coyote# **more /etc/coyote/portforwards**

port Y 10.0.2.2 tcp 2333 22 # Example - Secondary SSH

3.5. Coyote Linux Bootup

There are two network card in your Coyote Linux, one (LAN) is connected to the Skolelinux/Debian-edu server, either directly with a crossover cable, or via a switch, the other (WAN) is your network connection. Sometimes it can be a bit difficult to determine which of your network cards is which, especially if they are both of the same brand. The procedure I use to determine which card is which, is to use a crossover cable and connect it to the network card in the Skolelinux/Debian-edu main server.

1. First I start the Coyote Linux without any cable in the network cards
2. Then I use the crossover cable to connect Coyote Linux with the Skolelinux/Debian-edu main server, (make sure it goes into the NIC labeled eth0 if the mainservser is setup as a combi-server).
3. Then I login to the main server and try to **ping** the Coyote Linux machine with the command **ping -c10 10.0.2.1** or alternatively try to ping the main server from Coyote Linux with the command **ping -c10 10.0.2.2**.
4. When you get an answer, like

```
ping -c10 10.0.2.1
PING 10.0.2.1 (10.0.2.1): 56 data bytes
64 bytes from 10.0.2.1: icmp_seq=0 ttl=63 time=0.6 ms
64 bytes from 10.0.2.1: icmp_seq=1 ttl=63 time=0.3 ms
64 bytes from 10.0.2.1: icmp_seq=2 ttl=63 time=0.3 ms
```

, then you have found the network card on the Coyote Linux that is to be labelled as LAN. Then we know that the other network card is WAN. This procedure will only work as long as you have managed to configure the LAN network card properly, as indicated during boot by the line

```
LAN network: UP
```

Note: It's normal that you see

```
WAN network: down
```

at this point, since you have booted without any cables in the network cards.

Once you have determined the role of each network card, then you reboot with all the cables connected.

Different Names Used for the network cards

The two network cards are called various names in Coyote Linux. It's a bit confusing and inconsistent. Here is an overview:

Table 3-1. The Various Names Used for the network cards in Coyote Linux

This one goes to the existing network	Internet	eth1	WAN
This one goes to the Skolelinux/Debian-edu network	LAN network	eth0	LAN

Boot your Coyote Linux, making sure the Coyote Linux floppy is in the floppy drive, and that the machine has been configured in BIOS to boot from floppy.

Figure 3-12. Coyote Linux Login

Coyote Linux console

You may now login, use the username 'root' and the password you set when you created the floppy (if you did this from Windows), or just press **Enter** (empty password) to login if you made the floppy on Linux

Note: It's quit common that there is absolutely no visual feedback when you type in a password in Linux-system, this is in order to reveal as little information about your password as possible.

Figure 3-13. menu, status of network, down

menu status of network

Once inside, press 'c' to get the status of your network. In this case we have a problem:

Figure 3-14. menu, status of network, up

menu status of network

If all has gone well, they will both be 'up'

Q: It appears that the network card (LAN) that goes to the Skolelinux/Debian-edu network is not working: DOWN

A: If you have configured your network card according to A but it's still not working, then maybe you have chosen the wrong driver module for your network card

Q: It appears that the network card (WAN) that is connected to the Internet is not working: DOWN

A: There are two obvious reasons why the WAN network card is not UP:

1. You are trying to connect using the wrong Internet connection type. Have a look again at 2.b

If you have a connection with a DHCP-assigned address, and not a static one, then there must be a physical connection with a network cable between Coyote Linux and the connection.

2. You have chosen the wrong driver module for this network card.

You could try to login to Coyote Linux and then first choose **q) quit** to get out of the Coyote Linux menu, then issue the command

dmesg|more

use **SPACE** to page. Look for references to **eth0** and **eth1**. Look at the sidebar *Different Names Used for the network cards* for a reminder about what eth0 and eth1 means. There is usually an indicator there as to what the problem is.

Q: I have tried several different driver modules for my network cards, but I still haven't found the correct driver.

A: Have you had a look at this web page containing info about network card and corresponding driver modules for Coyote Linux? <http://www.dalantech.com>

3.6. Coyote Linux Command Line Login

You can now login using the command line, with the username **root**, and empty password, which is the only user available in Coyote Linux. The first thing you *must* do is to set the root password for your Coyote Linux¹

Note: If you don't set any password on your Coyote Linux, then anybody can gain access to it by going to the address <http://10.0.2.1:8180>

Warning

You must set the root password, also called the system password, immediately for Coyote Linux!

coyote login: root

This what you see when login to Coyote Linux the Menu;

Coyote Linux Gateway -- Configuration Menu

```
1) Edit main configuration file          2) Change system password
3) Edit rc.local script file            4) Custom firewall rules file
5) Edit firewall configuration          6) Edit port forward configuration

c) Show running configuration           f) Reload firewall
r) Reboot system                      w) Write configuration to disk

q) Exit Menu                          l) Logout
```

Selection:

The first thing you must do, is change the root password. Choose **2) Change system password**, do so by pressing «2» then press **ENTER**

Figure 3-15. Changing the Password

FIXME 18: description of image

You choose a password, minimum 5 characters, maximum 8 characters, which you type twice. Be aware that there is no output to the screen when you type the password, in case someone is looking over your shoulder.

```
Password changed.
Updating webadmin password...
```

Press **ENTER** to return to system menu.

If this is the feedback you get from Coyote Linux, then you have successfully changed the root password.

Since Coyote Linux runs from floppy, and stores everything in RAM, which is lost when you reboot Coyote Linux, you must save this new password to the floppy. Do this by choosing **w) Write configuration to disk**

Your new password is saved to the Coyote Linux floppy when you see this:

Backup script complete. Press **ENTER** to return to menu.

All changes you have made to Coyote Linux, are now saved to the floppy.

You can now reboot Coyote Linux, and you will see that the new password is in use. You can reboot Coyote Linux by pressing the **ON/OFF-button** on your Coyote Linux machine, or by choosing **r) Reboot system** from the Coyote Linux Menu.

If you have managed to get both network cards working, and Coyote Linux have a network connection, then you don't need to login using the command line anymore. In the future, you can use your web browser to login to Coyote Linux, look at Section 3.7

When choosing **q) quit** you will end up at the command line in Coyote Linux. If you need to go back to the Coyote Linux Menu, then type **menu** and press **ENTER**.

See Section 3.9 for a list of a few useful commands you can use from the command line in Coyote Linux

3.7. Coyote Linux Web Administrator

Coyote Linux has a nice and well-functioning web administrator that lets you perform almost all day-to-day operations. Point your web browser to the address <http://10.0.2.1:8180>

At this address you will be met by the Coyote Linux web administrator. Click on the link, and then write in the username **root** and the password you made, refer to Figure 3-15

Figure 3-16. Coyote Linux Web Administrator

FIXME 19: description of image

All options and choices are done in the Main Menu to the left.

Figure 3-17. Coyote Linux Main Menu

FIXME 20: description of image

i. Information

Choosing this will give you the status of your network cards, the IP addresses they have, uptime of Coyote Linux, load and such.

ii. LAN configuration

Here you have the option of changing the configuration of the LAN network card, the one that goes to the Skolelinux/Debian-edu network.

Warning

Don't change anything here! Doing so will severely reduce the performance of your Skolelinux/Debian-edu network.

FIXME: Should parse the contents of change_ip_setup in here, later.

Leave the values as they are, refer to A.

iii. Internet configuration

Here you have the chance of changing the values of your WAN network card, the one that goes to Internet. If you get a new ISP, or go from getting your IP address assigned by DHCP to having a static IP address, then this is the place to change that kind of information with no need for creating a new Coyote Linux floppy from scratch. See 2.b

iv. DHCP configuration

This gives you the chance to configure the DHCP-server that comes with Coyote Linux.

Warning

Do not enable the DHCP-server in Coyote Linux! See 2.h

v. Administrative Configurations

Here you can enable/disable services such as DNS, SSH, webadmin.

vi. Port Forwarding

Here you can change and enable port forwarding on Coyote Linux. This is a very practical and neat feature in a Skolelinux/Debian-edu network. Since Coyote Linux stops and blocks most

connections, even passing SSH, it's nice to be able to use port forwarding and that way still get past Coyote Linux with incoming SSH-connection to the Skolelinux/Debian-edu network.

With this port forwarding rule

```
Yes  TCP  Any  22  10.0.2.2  22  No    SSH straight into Mainserver
```

all SSH-connections coming to Coyote Linux will be redirected to the Skolelinux/Debian-edu main server. If this is advisable in your network, you must decide.

vii. Simplified Firewall Configuration

Here you can setup and configure the firewall rules in Coyote Linux. There are plenty of ready-made rules that you can use as examples.

viii. Advanced Firewall Configuration<

ix. QOS Configuration

Here you can setup bandwidth limitations

x. System password

Here you can change the root password, also known as the system password in Coyote Linux, just like you did using the command line in Section 3.6.

xi. Configuration files

This is the files that contains all your configurations.

xii. Diagnostic tools

Here you have useful tools, such as ping, gateway test, DNS server test, status of network.

xiii. Backup now

If you have made any changes in Coyote Linux, then you *must* remember to write them to floppy, by choosing this Main Menu item, otherwise your changes will be gone when you reboot Coyote Linux. There is a red warning at the bottom of the screen whenever you make changes to Coyote Linux without having them written to the floppy.

xiv. Reboot system

When you need to reboot Coyote Linux, you can do so from this Main Menu item. You will have to reconfirm this option.

Figure 3-18. Reboot or shutdown Coyote Linux?

FIXME 19: description of image

3.8. Login via SSH

Sometimes it might be necessary to login to Coyote Linux when there is no web browser available, or if you prefer to use the command line. Then you can use ssh to connect to Coyote Linux.

If you are logged in to a machine in the Skolelinux/Debian-edu network, then you use

```
ssh -l root 10.0.2.1
```

to login to Coyote Linux

If you are outside of the Skolelinux/Debian-edu network, you must replace the value 10.0.2.1 with the appropriate value as seen for network card WAN in i. In this case, it would be

```
ssh -l root 192.168.1.10
```

You will be met by almost the same choices as when logged into the Coyote Linux web administrator, but presented in a text-based menu.

```
Coyote Linux Gateway -- Configuration Menu
```

```

1) Edit main configuration file          2) Change system password
3) Edit rc.local script file            4) Custom firewall rules file
5) Edit firewall configuration          6) Edit port forward configuration

c) Show running configuration           f) Reload firewall
r) Reboot system                       w) Write configuration to disk

q) quit                                e) Exit
-----
```

```
Selection:
```

You have almost the same options as when logged into the Coyote Linux web administrator, see Section 3.7 for a brief description of the different choices.

When choosing **q) quit** you will end up at the command line in Coyote Linux if you need to go back to the Coyote Linux Menu, then type **menu** and press **ENTER**.

If you see this when trying to login to Coyote Linux:

```
klaus@tjener:~$ ssh 10.0.2.1 -l root
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
@      WARNING: REMOTE HOST IDENTIFICATION HAS CHANGED!      @
@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@@
IT IS POSSIBLE THAT SOMEONE IS DOING SOMETHING NASTY!
Someone could be eavesdropping on you right now (man-in-the-middle attack)!
It is also possible that the RSA host key has just been changed.
The fingerprint for the RSA key sent by the remote host is
34:b7:a3:9b:06:4c:e2:30:1b:0d:03:45:7b:22:b7:dd.
Please contact your system administrator.
Add correct host key in /skole/tjener/home0/klaus/.ssh/known_hosts to get rid of this messa
Offending key in /skole/tjener/home0/klaus/.ssh/known_hosts:27
RSA host key for 10.0.2.1 has changed and you have requested strict checking.
Host key verification failed.
```

Then it is most likely because you had previously logged into a different machine with the IP address 10.0.2.1, or you have changed a network card in Coyote Linux, or it is really a man-in-the-middle attack. The solution is to remove the offending key, in this case it's line number 27, in file /skole/tjener/home0/klaus/.ssh/known_hosts.

3.9. Useful Commands in Coyote Linux

Useful commands in Coyote Linux.

- ping

Useful to find out if the network is working. This command will see if there is any connection to Skolelinux/Debian-edu main server

```
coyote# ping -c5 10.0.2.2
PING 10.0.2.2 (10.0.2.2): 56 data bytes
64 bytes from 10.0.2.2: icmp_seq=0 ttl=64 time=0.9 ms
64 bytes from 10.0.2.2: icmp_seq=1 ttl=64 time=0.5 ms
```

- uptime

This command gives you the time Coyote Linux has been running since last boot.

```
coyote# uptime
 2:37pm up 80 days,  7:55, load average: 0.00, 0.00, 0.00
```

- dmesg

This command prints the information that the Linux kernel has found on your machine, things such as amount of RAM, CPU, network cards. If the output from **dmesg** is too much for the size of your screen, then you can pipe the output to the pager 'more', and use **SPACE** to read it all,

dmesg|more

- ifconfig

Shows verbose information about your network cards.

```
coyote# ifconfig

eth0      Link encap:Ethernet  HWaddr 00:50:FC:F8:D2:44
          inet addr:10.0.2.1  Bcast:10.0.3.255  Mask:255.255.254.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:314723 errors:0 dropped:0 overruns:0 frame:0
          TX packets:312105 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:53700845 (51.2 MiB)  TX bytes:277496136 (264.6 MiB)
          Interrupt:11 Base address:0x7000

eth1      Link encap:Ethernet  HWaddr 00:E0:18:A8:B1:BA
          inet addr:192.168.100.133  Bcast:192.168.100.255  Mask:255.255.255.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:307395 errors:0 dropped:0 overruns:0 frame:0
          TX packets:281202 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:272404311 (259.7 MiB)  TX bytes:47880640 (45.6 MiB)
          Interrupt:10 Base address:0xb800 Memory:e3000000-e3000038

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:14565 errors:0 dropped:0 overruns:0 frame:0
          TX packets:14565 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:1290756 (1.2 MiB)  TX bytes:1290756 (1.2 MiB)
```

- lsmod

This command lists loaded driver modules- useful to see which driver modules are used by the network cards.

```
coyote# lsmod
Module                Size  Used by
eeepro100             17516   1
3c59x                 24408   1
mii                   1852    0 [eeepro100]
ip_nat_quake3         1608    0 (unused)
ip_nat_mms            2448    0 (unused)
ip_nat_h323           2044    0 (unused)
ip_nat_amanda         1020    0 (unused)
```

In this listing, you'll see that the network card driver modules Intel pro100 and 3com series 3c59x which include 3c590, 3c595, 3c900, 3c905 are loaded. See Section 3.12

- route
- traceroute

Useful to trace the route a network packet takes; a nice way to find out where the problem really lies.

- showcfg

Another command that gives information about the state of the network cards.

Coyote running configuration display utility.

```
Internet      (eth1): UP
LAN network   (eth0): UP

-----Internet configuration-----
IP Address    192.168.100.133 (Static)
Netmask       255.255.255.0
Gateway       192.168.100.2
-----LAN configuration-----
IP Address    10.0.2.1
Netmask       255.255.254.0
Broadcast     10.0.3.255
-----DNS configuration-----
domain localdomain
nameserver 213.184.200.1
nameserver 213.184.200.2
-----
10:51am up 7 days, 20:53, load average: 0.00, 0.00, 0.00

Press enter to return to system menu.
```

- free

Use this command to see how much RAM you have in the machine, and how much is being used. This machine has 32MB of RAM.

```
coyote# free
              total        used        free      shared    buffers
   Mem:      30860         6004       24856          0          0
   Swap:          0           0           0
   Total:     30860         6004       24856
```

- menu

This commands starts the Coyote Linux Menu

```
Coyote Linux Gateway -- Configuration Menu
```

```
1) Edit main configuration file      2) Change system password
3) Edit rc.local script file        4) Custom firewall rules file
5) Edit firewall configuration      6) Edit port forward configuration

c) Show running configuration        f) Reload firewall
r) Reboot system                    w) Write configuration to disk
```

- reboot

```
coyote#reboot
```

This will reboot your Coyote Linux

- shutdown

```
coyote#halt
```

This will turn off your Coyote Linux

3.10. Coyote Linux as an Ordinary DHCP-Server in a Non-Skolelinux/Debian-edu Network

Coyote Linux is a perfect candidate if you just need a DHCP-server for your network, regardless of what type of machines you have in your network- Linux, Windows or Mac.

The only thing you have to configure differently, is to enable the DHCP-server. See 2.h

A short summary of making a Coyote Linux DHCP-server:

Coyote Linux as an Ordinary DHCP-server

- Remember to answer Yes to the question «Do you want to enable the Coyote DHCP-server [y/n]:»
- Once you have your Coyote Linux DHCP-server running, you will probably need to use a different address to login to it, if you didn't change the default LAN configuration:

```
Configuring system for Ethernet based Internet connection
```

```
By default, Coyote uses the following settings for the local network interface:
```

```
IP Address: 192.168.0.1
Netmask:    255.255.255.0
Broadcast:  192.168.0.255
Network:    192.168.0.0
```

```
Would you like to change these settings? [Y/N]: n
```

then you'll have to use the address 192.168.0.1 instead of 10.0.2.1 when logging in to the Coyote Linux web administrator, see Section 3.7 and Section 3.8

The new addresses are in this case:

- `ssh -l root 192.168.0.1`
- `http://192.168.0.1:8180`

3.11. Coyote Linux and different ISP

Note: I have not yet encountered an ISP that didn't work with Coyote Linux. Please tell me if you know of one.

This is list of ISP's that I know work well with Coyote Linux

- Nextgentel, Norway
- Tele2 ADSL Privat, Norway
- Tele2 ADSL Bedrift, Norway
- UPC Chello Classis, Norway
- Utdanningsetaten (The Department of Education) in Oslo (Not yet tested on InnsIKT-schools)

Due to a strange network policy at the Department of Education in Oslo, you *must* make the following changes at your mainserver:

In the file `/etc/bind/named.conf` change the following stanza²:

```
// forwarders {  
// By special request from the good people inside the Dept of Education in  
// Oslo:  
//     193.156.192.40;  
//     193.156.192.50;  
// Dept. of Education in Oslo  end of block  
//     0.0.0.0;  
// };
```

change it to

```
forwarders {  
// By special request from the good people inside the Dept of Education in  
// Oslo:  
    193.156.192.40;  
    193.156.192.50;  
// Dept. of Education in Oslo end of block  
//     0.0.0.0;  
};
```

That means removing the comment-slashes in front of forwarders.

If you don't do this, you will not be able to connect to the Internet due to DNS problems, and some BSD-network guy at the Department of Education will bite your head off.

After you have made this change in `/etc/bind/named.conf` you must restart bind, with

`/etc/init.d/bind9 restart`

- Telenor ADSL, Norway
- Høgskolen i Oslo (Oslo College)

You must make the same bind changes as with the Department of Education Oslo.

3.12. Supported network card and Driver Modules Used

3.12.1. Supported network card and Driver Modules Used

This is the list of driver modules included with Coyote Linux. All of the driver modules for network cards are also listed.

```
tjener:~/coyote# ls data/kernel/drivers/
3c501.o      eth16i.o      ne.o
3c503.o      ewrk3.o       ni5010.o
3c505.o      fealnx.o      ni52.o
3c507.o      forcedeth.o   ni65.o
3c509.o      hp100.o       pcnet32.o
3c515.o      hp.o          ppp_async.o
3c59x.o      hp-plus.o     ppp_deflate.o
8139cp.o     ip_conntrack_amanda.o ppp_generic.o
8139too.o    ip_conntrack_egg.o  pppoe.o
82596.o      ip_conntrack_ftp.o  pppox.o
8390.o       ip_conntrack_h323.o ppp_synctty.o
ac3200.o     ip_conntrack_irc.o  sch_htb.o
amd8111e.o   ip_conntrack_mms.o  sch_ingress.o
atl700.o     ip_conntrack_quake3.o sch_sfq.o
b44.o        ip_conntrack_rtsp.o sis900.o
bridge.o     ip_conntrack_tftp.o slhc.o
bsd_comp.o   ip_nat_amanda.o    smc9194.o
cls_fw.o     ip_nat_cuseeme.o   smc-ultra.o
cls_u32.o    ip_nat_ftp.o        softdog.o
cs89x0.o     ip_nat_h323.o       starfire.o
de4x5.o      ip_nat_irc.o         sundance.o
depca.o      ip_nat_mms.o         tlan.o
dgrs.o       ip_nat_quake3.o     tulip.o
dmfe.o       ip_nat_rtsp.o        typhoon.o
e100.o       ip_nat_tftp.o        via-rhine.o
e2100.o      lance.o             wd.o
eeepro100.o  lp486e.o            winbond-840.o
eeepro.o     mii.o               zlib_deflate.o
eexpress.o   natsemi.o           zlib_inflate.o
epic100.o    ne2k-pci.o
```

3.12.2. The Special Case of 3Com 509 ISA network card

This is a very popular network card. My Coyote Linux has two of them, both produced in 1989, and running continuously for about 3 years in my Coyote Linux. Once you have managed to get them running, they will probably run for a long time. It's just a bit difficult sometimes to get them running.

They are ISA type, which means their IO, IRQ and such must be configured by hand, not automatically, which can be quite a challenge, especially if you use two of them in a machine.

The IO and IRQ on these cards must be configured with a old DOS-configuration program, which can be a bit hard to find these days.

This DOS-configuration program is called `3c5x9cfg.exe`, and you use it like this;

1. Boot the machine into DOS, either MS-DOS or Freedos, or any other DOS variant. Using a W95 or W98 boot floppy is one way of doing it.
2. Once the machine is in DOS, insert the floppy with the program `3c5x9cfg.exe`, and run it by typing `3c5x9cfg.exe` using the DOS command line.
3. Once `3c5x9cfg.exe` is started, then with each of your 3c509 network card, configure them with the option 'auto'

Note: There have been reports of problems with two 3c509's in the same machine when one of the cards is a combo type, which is a type of card that has several different types of network connectors.

It's possible to find `3c5x9cfg.exe` here: Ruprecht-Karls-Universität Heidelberg
(<http://www.urz.uni-heidelberg.de/Netzdienste/nm/misc/3comnic/>)

3.13. Further Information about Coyote Linux

- Coyote Linux homepage (<http://www.coyotelinux.com>)
- Coyote Linux userforum, high activity (<http://www.vortech.net/phorums/list.php?8>)
- Coyote Linux, FAQ, choose 2.x - General (<http://www.coyotelinux.com/faq>)
- Another FAQ by Todd VerBeek (<http://rzero.com/coyote/faq.html>)

Notes

1. If you made the Coyote Linux floppy on Windows, then you have already set the root password. So you don't need to do so now, but you must use this password to login to Coyote Linux.
2. This is actually a symbolic link to `/etc/bind/debian-edu/named-bind9.conf`

Chapter 4. Network Architecture

This is in part based on <http://developer.skolelinux.no/arkitektur/arkitektur.html>
(<http://developer.skolelinux.no/arkitektur/arkitektur.html.en>)

4.1. Useful diagram for placement of server according to choice of profiles.

4.1.1. The different profiles on different servers.

Figure 4-1. The different profiles on different servers.

System settings

4.1.2. The two profiles Main-server and Thinclientserver combined to make Combiserver

Figure 4-2. Combi-server.

System settings

In a relatively small setup, with just a handful (small or large), you can easily bypass using a dedicated backbone switch, and just use a crossover cable to connect the firewall with the combi-server.

Note: Just beware that when you put the printer on a thinclient 192.168.0.0/24-network, the hostname **printer00** doesn't work. Also make sure to edit the KDE Printwizard so that it searches the 192.168.0.0/24-network for printers, not it's default 10.0.2.0/23-network.

Chapter 5. Skolelinux/Debian-edu Installation

Keyboard Layout

* *FIXME Should add a keyboard map here*

The installation of Skolelinux/Debian-edu is purely text-based- no use for a mouse. ¹ This means that all choices are marked and done using the keyboard only. Let me remind you of the placement of the keys used during installation, and their purpose.

1. **SPACE** is the very long key at the bottom of the keyboard. During installation, this is used to mark a choice.
2. **ENTER** is the big key to the right on the keyboard which is used during installation to execute your choice. It's sometimes referred to as **RETURN**
3. **TAB** is to the left on your keyboard. Normally it has two arrows, pointing in opposite directions. It is used during installation to jump between different menu choices in the installer.
4. **BACKSPACE** is not used during installation, but it's nice to know where it is. It's normally placed above **ENTER**. It normally has a picture of a rubber with a X inside.

Have a look at Section 6.2.1.3 for an image of a keyboard

The installation of the different Skolelinux/Debian-edu profiles, mainserver, Thinclientserver and workstation are almost identical during the first and second stages of installation.

Note: I will not go into the details about the last two available profiles in Skolelinux/Debian-edu, standalone and standalone-extras. They are not really part of the Skolelinux/Debian-edu network, but are meant for home use.

First, you need to make sure the machine is able to boot from the CD-ROM, see Section 5.1

5.1. Preparing the Machine to Boot from CD-ROM

Maybe your machine is already configured to boot from the CD-ROM. Start your machine with the Skolelinux/Debian-edu CD in the CD-ROM.

If you then see something similar to the screenshot in Figure 6-1, then you can skip straight to Section 6.2; otherwise, keep on reading.

If your machine has the BIOS option to boot from CD-ROM, then setting the CD-ROM as the first boot option in the BIOS may help. Later when the first stage of installation is over, you should change it back, so that the machine will boot from the hard drive.

Normally, when you turn the computer on, you will see how to enter the BIOS setup. It's usually one of the keys **F1**, **INS**, **F10** or maybe **DEL**. Refer to your manual, or the supplier of the computer, if you aren't able to get the machine to boot from the CD-ROM.

5.1.1. Using Smart Boot manager (SBM)

Another option, when the machine will not boot directly from CD-ROM, or you can't gain access to the BIOS, is to use SBM(Smart Boot Manager). This is a floppy that you boot from, which makes it possible to choose to boot from the CD-ROM. SBM is included on the Skolelinux/Debian-edu CD. Have a look in the directory `install` on the CD. There you will find a file called `sbm.bin`. Transfer this file to a floppy using the utility `rawrite`. In Windows, you'll find `rawrite` in the directory `install` as well. Have a look at the file `rawrite2.txt` for further info about `rawrite`

Warning

Do not try to simply copy `sbm.bin` to a floppy. That will not work. You have to use the utility `rawrite`

For further information about what SBM is, you should read the file `README.sbm`, you'll find that file in the directory `install` as well

If you have a running Linux system, then you mount your CD, and transfer `sbm.bin` with the command

```
mount /cdrom  
dd if=/cdrom/install/sbm.bin of=/dev/fd0
```

You may need to change the mount point used for your CD-ROM, and possibly also for the floppy.

Once you have managed to create a bootable SMB floppy, this is what greets you:

Figure 5-1. SMB greeting screen

SMB greeting screen

Under normal circumstances you may now just use the DOWN/UP-arrow on your keyboard to choose 'CD-ROM' end then just press **ENTER**

It doesn't matter whether you answer yes or no to the question about saving the changes

Figure 5-2. Saving changes

Saving changes

Figure 5-3. System settings

System settings

If you don't see any cd-rom entries, then you might have to rescan you computer for it. Press **TAB** to get the SBM menu, choose System Settings, then Rescan all boot records

Figure 5-4. Rescan all boot records

Rescan all boot records

Further info about SMB (Smart Boot Manager) can be found at the projects homepage
<http://btmgr.webframe.org/>

5.2. A Short Description of the Profiles in Skolelinux/Debian-edu

Note: The profile description you see during installation, like in Figure 6-6 comes from the file `src/debian-edu-install/debian/debian-edu-install.templates` at alioth.debian.org

GUI

You will repeatedly see references to GUI and Graphical User Interface. In short that means a computer mode where you can use the mouse to point and click. The opposite of a GUI mode is the pure command line. This is a *very* short explanation of GUI.

A Short Summary of the Different Profiles in Skolelinux/Debian-edu, and How They can be Combined

1. Main server

Warning

*All Skolelinux/Debian-edu networks **must have** one, and only one machine with this profile installed. You can combine this with workstation or thin client server if you like.*

Every Skolelinux network needs one, and only one machine running the 'Main Server' profile. This machine provides the (network)services (mainly file/network and LDAP), so without this machine the network does not work. Since this machine will hold all data files it will need a lot of hard disk space. Installing this option solely results in a machine without a Graphical User Interface(=GUI). If you want a GUI you'll need to include the workstation profile or thinclientserver ²

2. Workstation

Machines running the 'Workstation' profile are normal machines. Users logging on to a workstation are authenticated by the machine running the mainserver profile, and have their documents and personal settings stored in home directories on the machine running the mainserver profile.

If you want access to peripherals such as CD/DVD-players/burners, digital cameras, scanners, then this is the profile you want to install.

3. Thin client server

Machines running the thin client server profile are able to accept thin client connections. This profile also includes the workstation profile. To prevent network congestion machines running this profile need to have two network cards. All three profiles named so far, main server, workstation and thin client server, can be installed on the same machine.

This profile also includes the profile workstation

4. Main server + thin client server(including workstation)

This combination of profiles, also called a combi-profile, makes it possible to setup a complete Skolelinux/Debian-edu network with Workstations and thinclients using only one server. This is an acceptable solution if you only intend to run a small Skolelinux/Debian-edu network, maybe about 10-15 thin clients and a few workstations. For bigger installations this is definitely *not* advisable.

5. Main server + workstation

This combination of profiles mainly gives you a main server with a GUI. If you don't like the idea of administering your main server from the command line, then this is the combination you should choose.

6.

Note: These two profiles, 'standalone' and 'standalone-extras', are not a part of the Skolelinux/Debian-edu network. For this reason, I will not yet deal with these profiles in this document.

Standalone and standalone-extras

The two profiles 'standalone' and 'standalone-extras' cannot be installed on the same machine together with any of the profiles main server, workstation and thin client server

The 'standalone' profile is experimental and not yet functioning. Machines running the 'standalone' profile are meant to be run outside the Skolelinux/Debian-edu network (e.g. in the homes of pupils and teachers) as a standalone machine.

The 'standalone-extras' profile is complementary to the 'standalone' profile, providing extra programs for it.

Notes

1. Maybe someone in the future will add the possibility to play Solitaire during installation.
2. See the sidebar *GUI* for a short explanation on GUI.

Chapter 6. The First Stage of Skolelinux/Debian-edu Installation

6.1. Where to get the Skolelinux/Debian-edu CD-ROM

There are basically two ways of getting the Skolelinux/Debian-edu CD-ROM. Either you download it yourself, or you get someone else to do it for you.

6.1.1. Downloading the Skolelinux/Debian-edu CD-ROM

The version Skolelinux/Debian-edu that this document is aimed at is the Sarge based pr05
ftp://ftp.skolelinux.no/skolelinux-cd/debian-edu_sarge-i386-pr05.iso

The most recent testing version, released after the writing of this document is located at
ftp://ftp.skolelinux.no/skolelinux-cd/debian-edu_sarge-i386-current.iso

Further information about where to download the CD, and which version is the latest stable one can be found at http://www.skolelinux.org/portal/get_started/download/document_view

6.1.2. Get the latest CD sent by snail mail.

According to http://www.skolelinux.org/portal/get_started/cd/document_view you can have the cd send to you for the cost of the CD and shipping. Send an email to cd@skolelinux.no, remember to include the address you want the CD sent to in the email.

6.2. First Stage

The installation of Skolelinux/Debian-edu is divided into two stages, referred to as firststage and secondstage. The first stage starts when the machine boots from the Skolelinux/Debian-edu CD, and ends with the first reboot. The second stage starts when the machine boots from GRUB, and ends when the installation is finished and the machine reboots for all services to properly restart. It's during the second stage that you type the root password.

firststage usually takes about 10 minutes on a relatively fast machine, while secondstage takes a bit more, about 15-45 minutes.

The Different Steps in the First Stage of Installation

1. Power up your machine, making sure it is able to boot from the CD-ROM. See Section 5.1.

If your machine is able to boot from the CD-ROM, then you will be met by this picture:

Important: Throughout the installation you will only use the keyboard, no mouse.¹ You use **TAB** button to move between fields, and the **SPACE** button to make a selection, and to remove a selection, you use the **UP/DOWN/LEFT/RIGHT** arrows to move up and down in a selection list. You use **ENTER** to continue.

Have a look at the keyboard layout image in Section 6.2.1.3 for an overview of the placement of these buttons.

Figure 6-1. Starting up Skolelinux/Debian-edu from the CD

Installation welcome screen

There's not that much to do here, at least not under normal circumstances, other than pressing **ENTER**

Although you might want to investigate the possible different boot-options you can use.

6.2.1. Different bootoptions

Under certain circumstances, it might be useful to know about some of the different bootoptions you can use when installing Skolelinux/Debian-edu.

6.2.1.1. Reduce the amount of visible ram to the installer

The automatic partitioning that is used in Skolelinux/Debian-edu creates a swap-partition equal to 2 times the visible amount of ram, if you have 900MB or more of ram, then that swap-files becomes 1800MB in size. If this in your opinion is a waste of harddrive, then you can use the boot option mem=

Press F1 for help, or Enter to boot: linux mem=256m

6.2.1.2. Use a 2.6-kernel, for better hardware support, especially for SATA-disks

If you have a machine with some very new hardware, you might want to use a 2.6-kernel, which contains more and better hardware support.

Press F1 for help, or Enter to boot: linux26

If you want to combine a 2.6-kernel and reduce the amount of ram, you use

Press F1 for help, or Enter to boot: linux26 mem=256m

If you have SATA-disks in your machine, and boot **without** a 2.6-kernel, you most likely will end up with the installer not seeing your harddisks, like this:

Figure 6-2. Disks not found

No disks found

The solution is to use a 2.6-kernel, and then some, have a look at Section 6.2.4

You might also end up with the dreaded "No disks found" if you have a raidcontroller or scsi-controller that doesn't support Linux in you machine. In such a case, you should search Google for possible answers, in many such cases you solve the problem by manually loading the necessary modules during installation, have a look at Section 6.2.3.

6.2.1.3. Less automatic installation: expert mode

It's possible to choose a less automatic installation, by booting with the option

Press F1 for help, or Enter to boot:expert

If you want to boot in expert mode with a 2.6-kernel, you use

Press F1 for help, or Enter to boot:expert26

Note: Note that the keyboard layout at this stage is set to US, which means that the keys might be placed differently than what you are used to. The equal sign (=) key is 1 key to the left of the

BACKSPACE, and the plus sign (+) key is **SHIFT** plus the equal key. The minus key (-) is placed 2 keys to the left of **BACKSPACE**. The underscore key (_) is **SHIFT** plus the minus-key.

Figure 6-3. Keyboard with US layout, as seen from somewhere within Gnome controlpanel.

US keyboard layout

6.2.2. Choosing language

Figure 6-4. Choosing Language

Choose language

Here you must choose the language you want to use during installation. This language will be the pre-selected language for the all users. This doesn't exclude the use of any of the other available and supported languages in Skolelinux/Debian-edu. If you later want to change the default pre-selected language, have a look at the files `/etc/environment`, `/etc/kde3/system.kdeglobals`, `/opt/ltsp/i386/etc/lts.conf` and `/etc/X11/XF86Config-4`, and the command **update-locale-config**. The command **man update-locale-config** will give you more information about this command, and supported languages. The command **dpkg-reconfigure locales** might also be helpful.²

Notice to the right in this screenshot the #-sign. This indicates that there is more text available, but that it's not possible to display all of it in one screen. Use the **Arrow UP/DOWN** or **PageDown** and **PageUp** keys to scroll through the whole text.

At this point in the installation, it's possible to jump to a Virtual Terminal(VT) with the key combination **ALT+Arrow LEFT/RIGHT** or **ALT+F1,F2,F3,F4**. On F2 you have a VT where you can edit files during installation.

6.2.3. Virtual terminal VT

Sometimes it's necessary to manually load driver modules during installation in order to get certain hardware working, such as for certain Compaq/HP RAID controllers, cciss and some 3ware controllers, 3w-xxxx. You reach this VT by pressing **ALT-F2** And to return to the original screen you use **ALT-F1**

Figure 6-5. Virtual terminal VT

VT

6.2.4. The special case of SATA-disks and the missing cdrom

6.2.5. Information about profiles

Figure 6-6. Information about the Various "Profiles" #1

Information about profiles

As you can see from the slider to the right, there is more text than fits one screen, use the **UP/DOWN** arrows to scroll down and read the rest.

Figure 6-7. Information about the Various "Profiles" #2

Information about profiles

6.2.6. Manually adjusting the partition size for automatic partitioning

If you know that the partitions that the automatic partitioning tool ,autopartkit, will make are either too small or too big, or you need more or fewer partitions, and you don't want to fiddle with resizing them afterwards, like in Section 8.5.2, then you have to choice of altering the tables that autopartkit uses. This is achieved in a virtual terminal, VT#2 using preferably the editor nano . The files are located in the directory `/etc/autopartkit` during installation. If you want to change any of these, than you must do so before you choose what profile to install, switch over to VT when you see the screen that describes the different profiles.

There is plenty of editor available, I've standardized on the one called nano throughout this document. It is installed by default, and it contains helptext, and is rather easy to use, unlike others, which is generally more powerful, but nano suffices. There is more about nano in Section 8.2.2. For now now I just say that when you start nano, you'll see at the bottom something like this:

`^G Get Help`
`^X Exit`

`^O WriteOut`
`^J Justify`

`^R Read File`
`^W Where Is`

`^Y Prev Page`
`^V Next Page`

The `^`-symbol means that you should press **CTRL** in combination with the letter, e.g **CTRL**and X is Exit.

The different *.table-files corresponds to different profiles, like this:

- `Main-Server.table` corresponds to the profile Mainserver, see Section 2.2
- `Workstation+Thin-Client-Server.table` corresponds to the profile Thinclient server, see Section 2.3
- `Workstation.table` corresponds to the profile Workstation, see Section 2.5
- `Main-Server+Workstation.table` corresponds to a combination of Mainserver and Workstation, see Section 2.7
- `Main-Server+Thin-Client-Server.table` corresponds to a combination of Mainserver and Thinclient server, see Section 2.7

If you wanted to increase the size of `/usr` when installing the profile Mainserver, you would in VT2 write **nano /etc/autopartkit/Main-Server.table** there you will see the line

```
/usr                lvm:vg_system:lv_usr:default  448      4096
```

meaning that the partition `/usr` will be minimum 448MB big, and maximum 4096MB big (if the overall harddisk size allows this). If you want `/usr` to be 8000MB big, then you would edit the line to look like this

```
/usr                lvm:vg_system:lv_usr:default  448      8000
```

If you would like to have a backup-partition on a machine installed with the profile Workstation, maybe when you have setup a simple backup-machine, like described in Section 9.4, then you would in VT2 write **nano /etc/autopartkit/Workstation.table** and add this line

```
/backup            lvm:vg_system:lv_backup:default 10000    20000
```

that would create a backup-partition with the min/max-size of 10000MB/20000MB

Tip: You can of course add/delete, and change this later as you wish have a look at Section 8.5

6.2.7. The Various Profiles in Skolelinux/Debian-edu

Figure 6-8. The Various Profiles in Skolelinux/Debian-edu

The various profiles

Have a look at Section 5.2 for a short description of the various profiles.

Have a look at the sidebar *Keyboard Layout* for a brief explanation of the different keyboard keys used during installation.

You choose the profiles you want to install by placing a mark in front of the desired profile by using the **SPACEBAR** to place the mark. To navigate between the different fields, you use **TAB**, and when you are done, move to OK and install by pressing **ENTER**.

If your hard drive is not recognised, then you may need to manually load the driver module for your hard drive, SCSI-controller or your RAID-controller; do this in VT#2, see Section 6.2.3

Figure 6-9. Combining different profiles

Combining different profiles

As mentioned in Section 2.7 it is fully possible to combine different profiles, in this case the machine will be installed with Main-server and Thinclientserver.

After you have chosen which profile to install, the necessary packages are installed. Hopefully, you have only chosen hardware that works out-of-the-box with Skolelinux/Debian-edu.

Figure 6-10. Warning! The contents of all your hard drives will be erased!

Erase all disks

Warning

Everything you have on your hard drives will be deleted when installing Skolelinux/Debian-edu- don't try to avoid it. Skolelinux/Debian-edu will not easily co-exist together with any other operative system.³

To continue with the installation, you must choose **Yes**.

6.2.8. Installation complete

Figure 6-11. Installation complete

Installation complete

Make sure that the CD is not in the CD-ROM when you restart the machine. If you forget to remove it, the installation will start all over again.

The first stage of installation is now complete, well done.

Notes

1. There will be a GUI based installer available for the next stable release of Debian, see GUI for DebianInstaller (<http://wiki.debian.org/DebianInstallerGUI>)
2. No matter which language you use during installation, your users can choose another language- French, German, English, Spanish, etc.
3. For the brave and foolish, there is always a way. If you answer 'no' here, two times, you will be taken to a menu, like in expert-mode, see Section 6.2.1.3, where you can manually partition the harddisk. This is done with partman, use the *.table files in /etc/autopartkit for reference.

Chapter 7. The Second Stage of Skolelinux/Debian-edu Installation

7.1. Second Stage

The installation of Skolelinux/Debian-edu is divided into two stages, referred to as firststage and secondstage. The first stage starts when the machine boots from the Skolelinux/Debian-edu CD, and ends at the first reboot. The second stage starts when the machine boots from GRUB, and ends when the installation is finished and the machine reboots for all services to properly restart. It's in the second stage that you type the root password.

firststage usually takes about 10 minutes on a relatively fast machine, while secondstage takes a bit more time, about 15-45 minutes.

Note: The second stage of the Skolelinux/Debian-edu installation starts now.

Figure 7-1. Starting Skolelinux/Debian-edu from the Hard Drive with GRUB ¹

FIXME 30: description of image

Notice the countdown in the last line in this screenshot. GRUB is configured to automatically boot Skolelinux/Debian-edu after 5 seconds (in this concrete screenshot the counter has reached 3 seconds). The countdown can be stopped by pressing one of the **Arrow** keys. The arrow keys are also used to choose which of the available Linux kernels you want to boot. The automatic boot is very handy for booting the system unattended.

In the GRUB configuration file `/boot/grub/menu.lst` you can choose to change the default value for the countdown, the appearance of the GRUB menu, the name of the different kernels to boot, set a password, etc.

In this screenshot you have two boot choices.

```
Debian GNU/Linux, kernel 2.6.8-2-386
Debian GNU/Linux, kernel 2.6.8-2-386 (recovery mode)
```

Note: All this about GRUB should be moved to a later chapter, probably "finetuning"

Note: Notice here that the system is using 2.6-kernels, that is because this installation was done with the boot-option **linux26**, see linux26

You choose by highlighting the kernel you want to boot, move between the different kernels with the **Arrow UP/DOWN** keys, and boot the chosen kernel by pressing **ENTER**.

Usually you would just boot the default kernel without making any active choices, that is the line that does *not* contain `(recovery mode)`. The line containing `(recovery mode)` is used when you need to either do some repair or maintenance on the system, like when you need to resize the `lv-partition /usr`. When booting with the option `(recovery mode)` only a few basic services is started, no GUI. Booting with `(recovery mode)` is the same as Runlevel 1, which also can be reached from the command line by typing **init 1** See **man init**.

Password Protecting Grub

If you have a workstation, or a laptop that many users have access to, then it is advisable to set a password on GRUB, so that the users can't easily boot various unwanted kernels, or do mischief with the machine. By changing some options in the file `/boot/grub/menu.lst` you can tighten up the security when booting the machine. You can disable the possibility to boot the option `(recovery mode)`, and also refuse your users access to the GRUB command line, unless they have the GRUB-password. **FIXME**, add examples from `menu.lst`

See **man grub-md5-crypt** for how to encrypt a password in MD5 format

Password Protecting your BIOS

Remember to also put a password on your BIOS, so that it's not possible to change the boot order and boot from floppy, CD-ROM, or only from the hard drive.

Is your Server Placed in a Public Place?

If you have placed your server, against all sane advice, in a room with public access where everybody has physical access to the machine, then I advise you to immediately set a password on GRUB.

grub-md5-crypt

```
tjener:~#grub-md5-crypt
Password:
Retype password:
$1$xZBDT0$8uoC09XQGpBeXKnhUoU5A
```

This encrypted password is now ready for use in
/boot/grub/menu.lst

To set a password on GRUB, you open the file /boot/grub/menu.lst with your favourite editor, and add the options **password** and **lock** in appropriate places, like:

```
password --md5 $1$xZBDT0$8uoC09XQGpBeXKnhUoU5A
title          Debian GNU/Linux, kernel 2.6.8-2-386
root           (hd0,0)
kernel         /boot/vmlinuz-2.6.8-2-386 root=/dev/hda1 ro
initrd         /boot/initrd.img-2.6.8-2-386
savedefault
boot

title          Debian GNU/Linux, kernel 2.6.8-2-386 (recovery mode)
lock
root           (hd0,0)
kernel         /boot/vmlinuz-2.6.8-2-386 root=/dev/hda1 ro single
initrd         /boot/initrd.img-2.6.8-2-386
savedefault
boot
```

In this example, it's not possible to boot any other kernel than the normal kernel. Starting the GRUB command line is also not possible, without first providing the password, of course not in encrypted form.

Remember to put appropriate access rights on the file /boot/grub/menu.lst so that ordinary users can't read it.

```
chmod 600 /boot/grub/menu.lst
```

Figure 7-2. Skolelinux/Debian-edu Boot in Progress

Boot in progress

While booting Skolelinux/Debian-edu you will see a lot of seemingly cryptic messages scrolling by on your screen. These are useful messages from the Linux kernel.²

It is perfectly possible to "hide" these seemingly cryptic messages behind a nice image, that is accomplished with the application splashy, see splashy (<http://splashy.alioth.debian.org/wiki/doku.php>)

Figure 7-3. Fancy Skolelinux/Debian-edu Boot in Progress

Fancy Boot in progress

Naturally such a fancy bootup screen is **not** something you want to use on a server, but maybe on a laptop, or a normal workstation.

Note: Remember to insert the CD.

Figure 7-4. Welcome to your new Debian System!

Welcome to your new Debian System!

If the machine managed to boot, then you should now be greeted by base-config, which in Skolelinux/Debian-edu only is a matter of deciding the root-password.

Figure 7-5. The Root Password

root password

The password you are about to create, is the famous root password. With this password you will be able to do anything. Please read carefully the information provided on-screen.

Note: This text is from `skolelinux/src/rebuilds/shadow/debian/po`

Before proceeding, you need to set a password for 'root', the system administrative account. The root password shouldn't be easy to guess, and it shouldn't be a word found in the dictionary, or a word that could be easily associated with you, like your middle name. A good password will contain a mixture of letters, numbers and punctuation and will be changed at regular intervals. The root password is changed by running the 'passwd' program as root.

Why such caution? The root account doesn't have the restrictions that normal user accounts have. A malicious or unqualified user with root access can have disastrous results.

Note that you will not be able to see the password as you type it.

Please enter the same root password again to verify you have typed it correctly.

Figure 7-6. Type in password

password

Figure 7-7. Repeat password

password

You must type it twice, the same way both times. If you do it wrong, you get another chance.

Changing the Root Password

The root password can be changed from the command line with the command **passwd** when you are logged in as root; you can also use the graphical tool `kdepasswd` found in K-menu → Tools → Change Password. Have a look at Chapter 11 to find out how to change the other administrative password, LDAP administrator.

After you have created the root password, the installation of packages in the second stage starts. Remember to insert the CD in the CD-ROM drive- you will be prompted to do so if you have forgotten. The rest of the installation takes about 15-45 minutes, depending on how fast your machine is.

Note: You may now leave the machine, and take a well-deserved break. Have a refreshing drink. The installation will be completed without any further input from you.

* *It's now possible to login as user root in one of the VT by pressing **ALT-F2**, or **ALT-F3** and poke around the system a bit.*

Figure 7-8. Installation is Complete- the Necessary Reboot

Thank you for choosing Debian

After the installation is complete, a reboot is necessary in order to restart all services such as LDAP, DHCP, etc. See services for a list of services that works out-of-the-box with Skolelinux/Debian-edu.

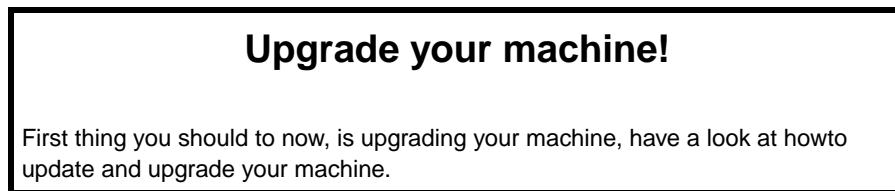


Figure 7-9. Installation is Complete- no KDM

console based login

If you have chosen to install only the profile mainserver, (which has no GUI) then you will also have no KDM, just a text-based login. You actually have 6 such text-based loginscreens, available through **ALT-F1** upto **ALT-F6**

Figure 7-10. Installation is Complete- KDM

kdm based login

If you have chosen to install a machine that includes one of the profiles: workstation or thinclientserver, then you will be met by kdm

Here you login with

Username: root
Password:

You can use **TAB** to move between the fields **Username** and **Password**, and then press **ENTER** to login, instead of using the mouse.

7.1.1. Something Went Wrong...

7.1.1.1. Videocard not working

Sometimes something goes wrong during installation. The most frequent error is the failure to automatically configure the video card when you have chosen to install a machine that includes one of the profiles workstation or thinclientserver

Note: It is not necessary for the thinclients that the videocard in the thinclientserver works.

Everything that happens during installation is logged in the file `/var/log/installer.log`. There is also plenty of useful information logged in the files in `/var/log/debian-installer`. When you need help with a problem that has occurred during installation, these files are very handy to have ready for diagnosing the problem. Always include `installer.log` in your bug reports. See Chapter 1 to get help.

If you use a different monitor during installation than the machine normally will use, you might have to reconfigure the xserver, one fast way of doing that is with the commands **xdebconfigurator** and **dexconf**. Like this:

```
tjener:~# xdebconfigurator
/usr/sbin/ddcprobe NOT found!
/usr/sbin/detect NOT found!
VIDEO CARD: Cirrus Logic GD 5446
VIDEO CARD DEVICE:
VIDEO CARD VENDOR:
VIDEO DRIVER: cirrus
VIDEO DRIVER SRC: discover
VIDEO MEMORY:
POSSIBLE XSERVER: xfree86
XSERVER 3:
XSERVER 4: xfree86
DEBIAN PACKAGE: xserver-xfree86
MOUSE DEVICE: /dev/psaux
MOUSE PROTOCOL: PS/2
MOUSE WHEEL: 0
KEYBOARD RULES: xfree86
MONITOR: Xdebc Monitor
MONITOR ID:
SUGGESTED METHOD: Simple
MONITOR SIZE: 15 inches (380 mm)
MONITOR HOR SYNC: 28-50
```

```
MONITOR VER REFR: 43-75
MONITOR MODES: 1024x768, 800x600, 640x480
MONITOR MODE: 1024x768 @ 70Hz
MONITOR DEFAULT DEPTH: 16
tjener:~#dexconf
tjener:~#dpkg-reconfigure xserver-xfree86
```

If this didn't help, then use the output from **lspci** and write a bugreport.

You might also have some success editing the file `/etc/X11/XF86Config-4`

7.1.1.2. Networkcards not found

Sometimes the installer doesn't recognise your networkcard, you will then see such a message:

Figure 7-11. Missing networkcard

Missing nic

If you are missing some of your networkcards, then it might just be that it's so new that Linux doesn't know about it yet, and are at loss when it comes to knowing which driver to use, sometimes it then helps to manually load the driver, but first you must find out what kind of networkcard you have, and what driver you need.

A useful command is **lspci** and **lspci -vn**, the later is much more verbose, once you know what driver you need, then load it manually with the command **modprobe driver_name**, to have it permanently loaded every time you boot, have a look at the file `/etc/modules`, it might also be that you just need to add the PCIID that you got from **lspci** to the file `/usr/share/discover/pci.lst` or maybe `/usr/share/discover/pci-26.lst`

The output of **lspci** might look like this:

```
tjener:~#lspci
0000:00:00.0 Host bridge: ServerWorks GCNB-LE Host Bridge (rev 32)
0000:00:00.1 Host bridge: ServerWorks GCNB-LE Host Bridge
0000:00:02.0 VGA compatible controller: ATI Technologies Inc Rage XL (rev 27)
0000:00:03.0 Ethernet controller: Intel Corp. 82540EM Gigabit Ethernet Controller (rev 02)
```

Have a look at the line mentioning " Ethernet controller", if I want more info about it, I use **lspci -vn** and pick out the stanza involving the pciid "0000:00:03.0"

```
tjener:~#lspci -vn
0000:00:03.0 0200: 8086:100e (rev 02)
        Subsystem: 1734:1107
```



```
Flags: bus master, 66MHz, medium devsel, latency 32, IRQ 177
Memory at fcde0000 (32-bit, non-prefetchable) [size=128K]
I/O ports at 4400 [size=64]
Capabilities: [dc] Power Management version 2
Capabilities: [e4] PCI-X non-bridge device.
Capabilities: [f0] Message Signalled Interrupts: 64bit+ Queue=0/0 Enable-
```

With this info, which might seem pointless to you, a search on Google or any of the Skolelinux/Debian-edu related helpchannels, see Chapter 1, will surely be able to help you.

7.1.2. Turning off, or Rebooting the Machine

If your video card was correctly, automatically configured, and you have a nice, blue KDM login screen, then you can reboot and shutdown your machine by choosing **menu-shutdown** and there choose either shutdown or reboot.

Figure 7-12. reboot/shutdown from kdm

reboot/shutdown from kdm

Note: Luckily, this is not an option in the KDM for thin clients, otherwise anybody could reboot/shutdown the server.

If you have a machine installed only with the profile mainserver, then you have to login to reboot/shutdown the machine, as in Figure 7-9, then you login as user **root**. Then you can shutdown your machine with either of the commands **halt,init 0** or **shutdown -h now** and reboot with **reboot, shutdown -r now** or **init 6**

If your machine stops with the message "Power Down" on the screen when you want to turn it off, you can try to see if loading the module **apm** helps. Be warned that not all servers like the module **apm**, especially machines with several processors. Run the command **modprobe apm**; if the machine doesn't complain, and the machine turns itself completely off, then you can permanently add the module by running the program modconf from the command line.

Figure 7-13. Now you may turn of the machine

turn of the machine

modconf

Then find the line towards the bottom `kernel/arch/i386/kernel` and there choose **apm**.

Figure 7-14. modconf apm

`modconf apm`

Just press **ENTER** when asked any questions. You know that the machine accepts apm when you see this:

`Installation succeeded.`

`Please press ENTER when you are ready to continue.`

Now it should turn itself off completely.

Warning

Just remember that not all machines like apm. Why do you want to turn off your server anyway?

Note: You could also just have used **nano /etc/modules** and there added apm

7.1.3. Bugzilla

Skolelinux/Debian-edu has a bug database and tracking system, it's based on the Mozilla bug system, and lots of people find it very strange to use. You don't necessarily need to get yourself an account in our Bugzilla, although it is handy when reporting bugs, but you should know about it, and it's location

The url is <http://bugs.skolelinux.no/>, if you want to query existing bug reports the url is <http://bugs.skolelinux.no/query.cgi>

Notes

1. GRUB is the bootloader used in Skolelinux/Debian-edu. Another often-used bootloader is LILO, which you can choose to install if you have chosen the expert installation method, or later after the installation of Skolelinux/Debian-edu is finished.
2. You can find the contents of these messages with the command **dmesg**, and by looking in the files `/var/log/dmesg` and `/var/log/daemon.log`.

Chapter 8. Fine-tuning

8.1. The Famous Command Line

As with most other common operating systems, almost all of your day-to-day tasks can be carried out with the mouse by click-and-point. In addition to that, you can use the famous command line to do them as well. Why would you want to use the command line? Well, it's faster and you have more control over what is going on behind the buttons, so it's an alternative. Besides, sometimes the command line is all you have...

8.1.1. Shell/Terminal

This is the easiest way of getting to the command line when you are in a graphical modus. Just start if from K-menu→Run command ...→konsole and there you write **konsole**, after you have pressed **Run**

Figure 8-1. run command

run command

you should see a white windowapplication, that is konsole

Figure 8-2. konsole

konsole

Notice the #-square, that means you are running this konsole as root-user, if you run konsole as an ordinary user you wouldn't have the #-square there, but a \$-dollar sign.

Note: The behaviour of the so-called bash-prompt can be changed via the file `.bashrc`. If you change the line

```
export PS1='\h:\w\$ '
```

into the line

```
export PS1='FUSI.\h:\w\$ '
```

then the prompt would look like this

```
FUSI.tjener:~#
```

instead of

```
tjener:~#
```

this first comes into effect next time you start konsole. For more fun you can do with the bash-prompt, have a look at <http://www.tldp.org/HOWTO/Bash-Prompt-HOWTO/>

From this commandline you can do all you need to do, but in most cases that can also be achieved via some GUI based program.

8.2. How to Edit System Configuration Files

8.2.1. How to Edit System Configuration Files with kwrite

It's often nice to be able to edit system configuration files, like with GRUB or bothersome videocard. For this purpose you need a tool, a text editor. We do not use things such as bold, underlining or fancy fonts in these files, so for this purpose we don't need a huge fancy application. There are already several such applications installed with your Skolelinux/Debian-edu system. Some of these are command line based, (vi, vim, nano), while others have a graphical interface, like kwrite

Tip: Everybody should learn how to use the command line based editor nano sooner or later, preferably sooner.

For starters, try using kwrite, you'll find it in K-menu→Editors→Text editor you could also just write "kwrite" in **Run command ...**

This is what kwrite looks like with the file `/etc/modules` opened

Figure 8-3. kwrite

kwrite

8.2.2. How to Edit System Configuration Files

The same file as in Section 8.2.1 opened with the textbased (commandline) editor nano, the command used is

nano /etc/modules

```

GNU nano 1.2.4                                     File: /etc/modules
# /etc/modules: kernel modules to load at boot time.
#
# This file should contain the names of kernel modules that are
# to be loaded at boot time, one per line.  Comments begin with
# a "#", and everything on the line after them are ignored.

ide-cd
ide-detect
ide-disk
psmouse
apm

[ Read 11 lines ]
^G Get Help      ^O WriteOut      ^R Read File     ^Y Prev Page     ^K Cut Text      ^C
^X Exit          ^J Justify       ^W Where Is     ^V Next Page     ^U UnCut Txt     ^T

```

Note: What you should realize, is that you can always use nano, while kwrite needs a GUI to work.

Tip: If you need to edit a file on a different machine, say you sit on a thinclient, and want to edit some file on the fileserver (assuming you don't have a combi-server), then the following command, which involves ssh will do that. This will open the file in question on the fileserver as the user root:

```
ssh root@tjener.intern 'nano /etc/modules'
```

There is more about ssh in Section 9.3.

8.3. The Pager application More

Sometimes when you issue a command, such as **dpkg -l** or try to view a file in a Virtual Terminal or in a shell, the output is too much for one screen display. To make it easier to read, you can "pipe" it through the application more, like this

```
dpkg -l | more
```

and use the **SPACEBAR** to display the next screen, and q to quit.

The pipe is a key (|) on the keyboard that has two vertical lines one above the other. It often looks like a one full vertical line. Have a look at the keyboard layout in Section 6.2.1.3

You can pipe the output of almost all command through more.

8.4. Installing a Kernel with Support for up to 4GB RAM and Multi-Processors

Due to the limited amount of space available on one CD, there is only one Linux kernel available on the Skolelinux/Debian-edu CD. So, the chosen Linux kernel is based on the lowest common denominator, which means that it should *work* on most kinds of hardware.

You can find out what kind of kernel you are running at the moment with the command **uname -a**, use this command later to verify that you have changed to a different kernel, if you choose to do so.

```
tjener:~#uname -a
Linux tjener.intern 2.6.8-2-386 #1 Thu May 19 17:40:50 JST 2005 i686 GNU/Linux
```

In this case I'm running a 386-kernel, which should work on just about any kind of PC, but it's not optimized for dual processors or more ram than 940MB.

If you want a kernel for the newer servers with plenty of RAM and multi-processors, you must download and install it afterward, which thanks to the genius package system of Debian, is very easy to do.

Have a look at Section 8.9 for a more detailed description of **apt-get** and **dpkg**.

The keyword to look for when you want a Linux kernel with support for more RAM than LOWMEM=940M and more than one CPU, is **SMP**, aka *Symmetric Multi-Processors*. This command issued from a shell, will list available Linux kernels, ready for installation:

apt-cache search kernel-image | grep smp

At the time this is being written, this returns:

```
kernel-image-2.4-686-smp - Linux kernel image for version 2.4 on PPro/Celeron/PII/PIII/P4 SMP
kernel-image-2.4-k7-smp - Linux kernel image for version 2.4 on AMD K7 SMP
kernel-image-2.4.27-2-686-smp - Linux kernel image for version 2.4.27 on PPro/Celeron/PII/PIII/P4 SMP
kernel-image-2.4.27-2-k7-smp - Linux kernel image for version 2.4.27 on AMD K7 SMP
kernel-image-2.6-686-smp - Linux kernel image for version 2.6 on PPro/Celeron/PII/PIII/P4 SMP.
kernel-image-2.6-amd64-k8-smp - Linux kernel image for version 2.6 on AMD64 SMP systems
kernel-image-2.6-em64t-p4-smp - Linux kernel image for version 2.6 on Intel EM64T SMP systems
kernel-image-2.6-k7-smp - Linux kernel image for version 2.6 on AMD K7 SMP.
kernel-image-2.6.8-11-amd64-k8-smp - Linux kernel image for version 2.6.8 on AMD64 SMP systems
kernel-image-2.6.8-11-em64t-p4-smp - Linux kernel image for version 2.6.8 on Intel EM64T SMP systems
kernel-image-2.6.8-2-686-smp - Linux kernel image for version 2.6.8 on PPro/Celeron/PII/PIII/P4 SMP.
kernel-image-2.6.8-2-k7-smp - Linux kernel image for version 2.6.8 on AMD K7 SMP.
```

There is no need to explicitly specify the kernel version, like 2.4.27 or 2.6.8, just use 2.4 or 2.6, so the above then boils down to

```
kernel-image-2.4-686-smp - Linux kernel image for version 2.4 on PPro/Celeron/PII/PIII/P4 SMP
kernel-image-2.4-k7-smp - Linux kernel image for version 2.4 on AMD K7 SMP
kernel-image-2.6-686-smp - Linux kernel image for version 2.6 on PPro/Celeron/PII/PIII/P4 SMP.
kernel-image-2.6-amd64-k8-smp - Linux kernel image for version 2.6 on AMD64 SMP systems
kernel-image-2.6-em64t-p4-smp - Linux kernel image for version 2.6 on Intel EM64T SMP systems
kernel-image-2.6-k7-smp - Linux kernel image for version 2.6 on AMD K7 SMP.
```

Now you just need to know what kind of processor you have, 686 (Intel), k7 (AMD), AMD64 or EM64T

Once you know which kernel is the correct one for your machine, you can install it with the command

apt-get install kernel-image-2.6-<your cpu>-smp

If you have Intel Xeon you would use

apt-get install kernel-image-2.6-686-smp

Or if you use 2.4-kernel

apt-get install kernel-image-2.4-<your cpu>-smp

If you have AMD Athlon(TM) MP 2000 you would use

apt-get install kernel-image-2.6-k7-smp

When you install the new kernel, you may see something like this:

```
tjener:~#apt-get update
tjener:~#apt-get install kernel-image-2.6-686-smp
Reading Package Lists... Done
Building Dependency Tree... Done
The following extra packages will be installed:
  kernel-image-2.6.8-2-686-smp
Suggested packages:
  lilo kernel-doc-2.6.8 kernel-source-2.6.8
Recommended packages:
```

```

irqbalance
The following NEW packages will be installed:
  kernel-image-2.6-686-smp kernel-image-2.6.8-2-686-smp
0 upgraded, 2 newly installed, 0 to remove and 0 not upgraded.
Need to get 15.3MB of archives.
After unpacking 44.9MB of additional disk space will be used.
Do you want to continue? [Y/n]
Get:1 http://ftp.debian.org sarge/main kernel-image-2.6.8-2-686-smp 2.6.8-16 [15.3MB]
Get:2 http://ftp.debian.org sarge/main kernel-image-2.6-686-smp 101 [2154B]
Fetched 15.3MB in 1m13s (208kB/s)
Selecting previously deselected package kernel-image-2.6.8-2-686-smp.
(Reading database ... 80762 files and directories currently installed.)
Unpacking kernel-image-2.6.8-2-686-smp (from ../kernel-image-2.6.8-2-686-smp_2.6.8-16_i386.deb)
Selecting previously deselected package kernel-image-2.6-686-smp.
Unpacking kernel-image-2.6-686-smp (from ../kernel-image-2.6-686-smp_101_i386.deb) ...
Setting up kernel-image-2.6.8-2-686-smp (2.6.8-16) ...
File descriptor 3 left open
File descriptor 4 left open
File descriptor 5 left open
File descriptor 6 left open
File descriptor 7 left open
  Finding all volume groups
  Finding volume group "vg_data"
  Finding volume group "vg_system"
Searching for GRUB installation directory ... found: /boot/grub .
Testing for an existing GRUB menu.lst file... found: /boot/grub/menu.lst .
Searching for splash image... none found, skipping...
Found kernel: /boot/vmlinuz-2.6.8-2-686-smp
Found kernel: /boot/vmlinuz-2.6.8-2-386
Updating /boot/grub/menu.lst ... done
Setting up kernel-image-2.6-686-smp (101) ...

```

You see here that I asked for the installation of `kernel-image-2.6-686-smp`, and it automatically translated that into installing `kernel-image-2.6.8-2-686-smp`, and it also suggests some other packages to install.

You Need to Reboot.: In order for the newly-installed kernel to be taken into use, you must reboot.

This is the only time you ever need to reboot your Skolelinux/Debian-edu machine, while installing other programs. There is no need for a reboot, except when installing a new kernel.

After you have installed a SMP-enabled kernel, and have rebooted your machine, you can use the commands **free** and **cat /proc/cpuinfo** to see if the newly-installed kernel sees all of your processors and RAM;

```

ltspserver00:~#free
              total          used          free       shared    buffers     cached
Mem:          4074752      4045556        29196             0        339248       2327780
-/+ buffers/cache:      1378528        2696224
Swap:         1835000           5852       1829148

```


Here I have trimmed the output a bit, removed the unnecessary output.

```
ltspserver00:~# cat /proc/cpuinfo
processor      : 0
vendor_id     : GenuineIntel
cpu family    : 15
model         : 2
model name    : Intel(R) Xeon(TM) CPU 2.66GHz

processor      : 1
vendor_id     : GenuineIntel
cpu family    : 15
model         : 2
model name    : Intel(R) Xeon(TM) CPU 2.66GHz

processor      : 2
vendor_id     : GenuineIntel
cpu family    : 15
model         : 2
model name    : Intel(R) Xeon(TM) CPU 2.66GHz

processor      : 3
vendor_id     : GenuineIntel
cpu family    : 15
model         : 2
model name    : Intel(R) Xeon(TM) CPU 2.66GHz
```

Need more than 4GB of RAM?

If you need support for more than 4GB of RAM in your kernel, then you have to compile your own kernel, or get someone else to do it for you.

If you now run **uname -a** after you have installed a new kernel, you will see

```
tjener:~# uname -a
Linux tjener.intern 2.6.8-2-686-smp #1 SMP Thu May 19 17:27:55 JST 2005 i686 GNU/Linux
```

8.5. Changing the Size of the LVM-Partitions

Remember to reduce the size of the filesystem.

You must remember to reduce the size of the filesystem that is on the volume *before* you shrink the volume itself, otherwise you *will* lose data. When shrinking the size of the filesystem, you must know the *knew* size of the volume, *in blocks!!!!*

Remember backing up your data before trying to resize your filesystems!

It's *always* smart to read the manual-pages regarding the commands you use. The manual-page for **lvreduce**, says it all:

```
tjener:~# man lvreduce
lvreduce allows you to reduce the size of a logical volume. Be careful
when reducing a logical volume's size, because data in the reduced part
is lost!!!
You should therefore ensure that any filesystem on the volume is
resized before running lvreduce so that the extents that are to be
removed are not in use.
```

Tip: You should definitely supplement this short introduction to lvm with the full in-depth documentation on LVM which is available from *The Linux Documentation Project* (<http://www.tldp.org/>) under the link LVM-HOWTO (<http://www.tldp.org/HOWTO/LVM-HOWTO/>)

At the moment, there are 7 partitions of the lvm type in Skolelinux/Debian-edu. They are grouped in two different vg's, vg_system and vg_data:

1. /usr, see Section 8.5.1
2. /skole/tjener/home0, see Section 8.5.2
3. /skole/backup, see Section 8.5.3
4. /var, see Section 8.5.4
5. /var/opt/ltsp/swapfiles, see Section 8.5.5
6. swap, see Section 8.5.6
7. /var/spool/squid, see Section 8.5.7

Installing ash

You might want to have ash installed on your system for this exercise. ash is on the cd, but is not installed by default.

```
tjener:~# apt-get install ash
Reading Package Lists... Done
Building Dependency Tree... Done
The following NEW packages will be installed:
  ash
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 0B/14.9kB of archives.
After unpacking 69.6kB of additional disk space will be used.
Selecting previously deselected package ash.
(Reading database ... 33386 files and directories currently installed.)
Unpacking ash (from ../d/dash/ash_0.5.2-5_all.deb) ...
Setting up ash (0.5.2-5) ...
```

8.5.1. Resizing the /usr Partition

This lv belongs to `vg_system`. It's present in the profiles `mainserver`, `workstation` and `thinclientserver`.

All installed programs are placed in this partition. If this partition is full, you can't add new packages to the system, other than that the system will function just fine.

The resizing of this partition is a bit tricky.

1. The tricky part about resizing this partition is that you have to unmount the partition that you are using, which is kind of like sawing off a tree branch that you are sitting on. However, we can manage it by using a neat little trick- switching to the shell ash. First, you need to bring the machine down to **runlevel 1** with the command **init 1**.

First of all, you need to tell all your users that they have to logout, otherwise they will be forcibly logged out, then type

init 1

from the command line.

You can verify that you now are running under a different runlevel with the command **runlevel**

```
tjener:~# runlevel
1 S
```

You might also see "Unknown" instead of "1 S"

2. First you need to notice the current size of `/usr` before you change it, use the command **df -h /usr**

```
tjener:~#df -h /usr
Filesystem              Size  Used Avail Use% Mounted on
/dev/vg_system/lv_usr
                        1.0G  400M  600M  40%  /usr
```

3. Then have a look at how much free space there is in `vg_system`

```
vgdisplay /dev/vg_system
```

Look for a line such as:

```
Free  PE / Size      175 / 5.47 GB
```

4. The machine is now in runlevel 1. Login as user `root` and switch to another shell

exec /bin/ash

You will recognize that you are using a different shell by the prompt, which looks like: `\h:w\$.` If you make a typo in the shell `ash`, you have to start writing the command all over again, because the **BACKSPACE** and **Arrow** keys don't work here. You start all over with **CTRL-C**

5. Before you can unmount the partition `/usr`, you must unmount all other partitions.

```
tjener:~# exec /bin/ash
\h:\w$ df -h
Filesystem              Size  Used Avail Use% Mounted on
/dev/hda1                206M   70M  126M  36% /
tmpfs                   126M     0  126M   0% /dev/shm
/dev/mapper/vg_system-lv_usr
                        933M  409M  486M  46% /usr
/dev/mapper/vg_system-lv_var
                        388M   37M  335M  10% /var
/dev/mapper/vg_data-lv_home0
                        489M   8.1M  461M   2% /skole/tjener/home0
/dev/mapper/vg_data-lv_backup
                        669M   17M  619M   3% /skole/backup
/dev/mapper/vg_system-lv_squid
                        237M   8.1M  217M   4% /var/spool/squid
none                    126M     0  126M   0% /tmp
tmpfs                    10M   652K   9.4M   7% /dev
\h:\w$ umount /var/spool/squid
\h:\w$ umount /skole/backup
\h:\w$ umount /skole/tjener/home0
\h:\w$ umount /var
\h:\w$ umount /usr
\h:\w$ df -h
```

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/hda1	206M	70M	126M	36%	/
tmpfs	10M	652K	9.4M	7%	/dev

6. If you found, when checking the space available in `vg_system`, something like this:

`vgdisplay /dev/vg_system`

```
Free   PE / Size          175 / 5.47 GB
```

then you have 5.47GB free space that you can use to extend `lv_usr`

If you want to *increase* the size with 1GB, then this is the commands to use:

```
e2fsck -fy /dev/vg_system/lv_usr
lvextend --size +1G /dev/vg_system/lv_usr
resize2fs /dev/vg_system/lv_usr
```

If you want to *increase* the size with 100MB, then this is the commands to use:

```
e2fsck -fy /dev/vg_system/lv_usr
lvextend --size +100M /dev/vg_system/lv_usr
resize2fs /dev/vg_system/lv_usr
```

If the resize was successful, then you can mount the partition with **`mount /usr`**. Then check the new size of the partition with **`df -h /usr`**. In this case it should look something like:

Filesystem	Size	Used	Avail	Use%	Mounted on
/dev/vg_system/lv_usr					
	2.0G	400M	1.6G	20%	/usr

7. Now you can restart the machine with **`init 6`**, and your users can logon.

8.5.1.1. Problems and Solutions

Q: When I try to unmount a partition, it fails with the error "device busy"

A: This is most likely due to the fact that a user, or a program, is using that partition. If you are trying to unmount `/skole/tjener/home0`, then it is possible that not all of your users have logged out. If you are trying to unmount `/var`, then you must first unmount the partition `/var/opt/ltsp/swapfiles`. If the device is still busy, then if possible, try to bring the machine down to runlevel 1, **`init 1`**.

Q: After I have mounted the partition, and the machine starts up again from runlevel 1, it freezes with the message

```
NFS.....
```

A: The only solution I know of, is to restart the machine hard, which means to use the power button to turn the machine off and then on again. This problem could have been avoided if you had used **init 6**, or **reboot** after you had resized the partition in runlevel 1, and not just used the **exit**.

8.5.2. Resizing /skole/tjener/home0

This lv belongs to `vg_data`. It's only present in the profile `mainserver`

This is the partition where the users' home directories are stored.

The resizing of `/skole/tjener/home0` is done pretty much the same way as with `/usr`. As a matter of fact it's much easier, since it doesn't involve changing to runlevel 1 or changing the shell. I'll briefly mention the relevant commands; see `resize /usr` for more info.

1. Login as root, and tell all your users they must logout.
2. Check the current size of your partition,

```
df -h /skole/tjener/home0
```

3. Unmount the partition,

```
umount /skole/tjener/home0
```

4. If you get

```
tjener:~# umount /skole/tjener/home0/
umount: /skole/tjener/home0: device is busy
umount: /skole/tjener/home0: device is busy
```

It might help stopping `nfs`, since `/skole/tjener/home0/` might be `nfs`-mounted on `thinclientserver` and workstations.

```
tjener:~# /etc/init.d/nfs-common stop
Stopping NFS common utilities: statd.
tjener:~# /etc/init.d/nfs-kernel-server stop
Stopping NFS kernel daemon: mountd nfsd.
Unexporting directories for NFS kernel daemon...done.
```

Then try again to unmount.

Note: If you have stopped nfs, remember to start it afterwards, once you are done with resizing and have mounted it again.

5. Check the amount of available space in the volume group,

vgdisplay /dev/vg_data

```
tjener:~# vgdisplay /dev/vg_data
--- Volume group ---
VG Name                vg_data
System ID
Format                 lvm2
Metadata Areas         1
Metadata Sequence No   6
VG Access               read/write
VG Status               resizable
MAX LV                 0
Cur LV                 2
Open LV                 2
Max PV                 0
Cur PV                 1
Act PV                 1
VG Size                 1.94 GB
PE Size                 4.00 MB
Total PE                496
Alloc PE / Size         296 / 1.16 GB
Free PE / Size           200 / 800.00 MB
VG UUID                 xplJyV-3xRB-H3FU-jO9Q-8CrV-R8mL-ZWxb2R
```

You can also use

pvs

```
tjener:~# pvs
PV /dev/hda6   VG vg_data    lvm2 [1.94 GB / 800.00 MB free]
PV /dev/hda5   VG vg_system  lvm2 [2.73 GB / 692.00 MB free]
Total: 2 [4.67 GB] / in use: 2 [4.67 GB] / in no VG: 0 [0 ]
```

6. Resize the partition, in this example it's *increased* with 100M

```
tjener:~# e2fsck -fy /dev/vg_data/lv_home0
fsck 1.37 (21-Mar-2005)
e2fsck 1.37 (21-Mar-2005)
Pass 1: Checking inodes, blocks, and sizes
Pass 2: Checking directory structure
Pass 3: Checking directory connectivity
Pass 4: Checking reference counts
Pass 5: Checking group summary information
/dev/vg_data/lv_home0: 22/103632 files (0.0% non-contiguous), 21334/413696 blocks
tjener:~# lvextend --size +100M /dev/vg_data/lv_home0
Extending logical volume lv_home0 to 504.00 MB
```

```

    Logical volume lv_home0 successfully resized
tjener:~# resize2fs /dev/vg_data/lv_home0
resize2fs 1.37 (21-Mar-2005)
Resizing the filesystem on /dev/vg_data/lv_home0 to 516096 (1k) blocks.
The filesystem on /dev/vg_data/lv_home0 is now 516096 blocks long.

```

7. Mount the partition, **mount /skole/tjener/home0**
8. Check the new size of the partition, **df -h /skole/tjener/home0**
9. Start nfs again, if you had to stop it.

```

tjener:~# /etc/init.d/nfs-kernel-server start
tjener:~# /etc/init.d/nfs-common start

```

8.5.3. Resizing /skole/backup

This lv belongs to vg_data. It's only present in the profile mainserver

This is the default partition used for placing the backups made and administered with the Skolelinux/Debian-edu-developed Webmin module slbackup.

Resizing this partition is very similar to resizing /skole/tjener/home0- it belongs to the same vg-group, vg_data.

If you want to increase /skole/backup with 600MB, the command would be

```

umount /skole/backup
e2fsck -fy /dev/vg_data/lv_backup
lvextend --size +600M /dev/vg_data/lv_backup
resize2fs /dev/vg_data/lv_backup
mount /skole/backup

```

8.5.4. Resizing /var

This lv belongs to vg_system. It's present in the profiles mainserver and thinclientserver.

The resizing of this partition is done in a similar way to the resizing of /usr, except that you don't need to switch to another shell. But you must remember to unmount the partition /var/opt/ltsp/swapfiles if this is done a machine with the profile Thinclientserver installed. See swapfiles .

You must also remember to umount the partition /var/spool/squid before trying to umount /var, otherwise you just get:

```
tjener:~# umount /var/
umount: /var: device is busy
umount: /var: device is busy
```

This means you should be in runlevel 1, use the command **init 1**.

If you want to increase /var with 400MB, the command would be

```
umount /var
e2fsck -fy /dev/vg_system/lv_var
lvextend --size +400M /dev/vg_system/lv_var
resize2fs /dev/vg_system/lv_var
mount /var
```

8.5.5. Resizing /var/opt/ltsp/swapfiles

This lv belongs to vg_system. It's only present in the profile thinclientserver

This partition contains the swapfiles for the thinclients. The size of each of these swapfiles is 32MB.¹²

This partition is resized similarly to /skole/tjener/home0.

A reasonable size for this partition would be 32MB times the number of thin clients you plan to have. If you try to boot more thin clients with swapfiles than you have space for in /var/opt/ltsp/swapfiles, then the thin client will not boot.

These swapfiles will be placed in /var/opt/ltsp/swapfiles, with the file names 192.168.0.10.swap, 192.168.0.11.swap, 192.168.0.12.swap. If you delete these swapfiles, they will be created again next time the thin client boots.

If you want to increase /var/opt/ltsp/swapfiles with 600MB, the command would be

```
umount /var/opt/ltsp/swapfiles
e2fsck -fy /dev/vg_system/lv_ltsp_swap
lvextend --size +600M /dev/vg_system/lv_ltsp_swap
```

```
resize2fs /dev/vg_system/lv_ltsp_swap
mount /var/opt/ltsp/swapfiles
```

If there is already thinclients running using such a swapfile, you might have to stop nfs before you manage to umount /var/opt/ltsp/swapfiles

```
/etc/init.d/nfs-common stop
/etc/init.d/nfs-kernel-server stop
```

And then when you are done resize, start nfs again

```
/etc/init.d/nfs-kernel-server start
/etc/init.d/nfs-common start
```

8.5.6. Swap

This lv belongs to vg_system. It's present in the profiles mainserver, workstation and thinclientserver.

Resize the swap-partition is a bit different than the other partitions, mainly because there is no ext2 filesystem on this partition.

First use **free** to see the current size of swap

```
ltspserver05:~# free
```

	total	used	free	shared	buffers	cached
Mem:	256968	96684	160284	0	5536	48500
-/+ buffers/cache:		42648	214320			
Swap:	524280	0	524280			

Then turn swap off with the command **swapoff**

```
ltspserver05:~# swapoff /dev/vg_system/lv_swap
```

Then resize the swap-partition, as usual

```
ltspserver05:~# lvextend --size +200M /dev/vg_system/lv_swap
Extending logical volume lv_swap to 712,00 MB
Logical volume lv_swap successfully resized
```

Then make new swap with the **mkswap**

```
ltspserver05:~# mkswap /dev/vg_system/lv_swap
Setting up swapspace version 1, size = 746582 kB
no label, UUID=fd634991-e5ca-4aac-9fe8-a000bde6bc38
```

Then turn on swap again with the command **swapon**

```
ltspserver05:~# swapon /dev/vg_system/lv_swap
```

Then check if you now have a different swapsize

```
ltspserver05:~# free
```

	total	used	free	shared	buffers	cached
Mem:	256968	97036	159932	0	5768	48520
-/+ buffers/cache:		42748	214220			
Swap:	729080	0	729080			

As you can see, 200MB more swap.

Probably the most interesting would be to make the swap-partition smaller, for that use the same commands as above, but use **lvresize -L -300M /dev/vg_system/lv_swap** to reduce the size by 300MB

```
ltspserver05:~# swapoff /dev/vg_system/lv_swap
ltspserver05:~# lvreduce --size -300M /dev/vg_system/lv_swap
WARNING: Reducing active logical volume to 412,00 MB
THIS MAY DESTROY YOUR DATA (filesystem etc.)
Do you really want to reduce lv_swap? [y/n]: y
Reducing logical volume lv_swap to 412,00 MB
Logical volume lv_swap successfully resized
ltspserver05:~# mkswap /dev/vg_system/lv_swap
Setting up swapspace version 1, size = 432009 kB
no label, UUID=9db01ef6-7623-4e5b-956e-b6fe607aec4f
ltspserver05:~# swapon /dev/vg_system/lv_swap
ltspserver05:~# free
```

	total	used	free	shared	buffers	cached
Mem:	256968	97576	159392	0	6456	48544
-/+ buffers/cache:		42576	214392			
Swap:	421880	0	421880			

8.5.7. Resizing /var/spool/squid

This lv belongs to vg_system and it's only present in the profile mainservers. This partition hold the cache belonging to squid, which is a FTP, HTTP and HTTPS proxy cache. This partition is changed the same way as swapfiles. Make sure you stop squid before you try to resize,

```
/etc/init.d/squid stop
```

otherwise you only end up with

```
umount: /var/spool/squid: device is busy
```

The maximum size of this cache is default set to 100MB; look in the file `/etc/squid/squid.conf` for the line number 699

```
# cache_dir ufs /var/spool/squid 100 16 256
```

If you need a bigger squid-cache, remove the `#` in front of the line, and change the 100 to desired size. Then you must stop squid, resize the squid-cache and finally start squid again. If you need 500MB for your squid-cache, this line will do that:

```
cache_dir ufs /var/spool/squid 500 32 256
```

```
/etc/init.d/squid stop  
squid -z  
/etc/init.d/squid start
```

8.5.8. Adding a New Volume(lv)

For things such as video and picture, as well as users that need extra file space, you might need to create a new volume. Let's pretend you need a volume for our video footage. Let us name it `video`, and place it in `vg_data` as `/dev/vg_data/lv_video`, and mount it at `/skole/video`

First you need to find out how much space you have available in `vg_data`

```
vgdisplay /dev/vg_data
```

or maybe there is more space in `vg_system`

```
vgdisplay /dev/vg_system
```

Another option that displays the same kind of information is

```
pvs
```

You must create the mount point `/skole/video`

`mkdir /skole/video`

Then you create the new volume

`lvcreate --size 2G --name lv_video vg_data`

In this example, the size is 2GB. Have a look at `lvm-home0` to find out how to resize this. Then you need to make a file system

`mke2fs -j /dev/vg_data/lv_video`

Then add this new partition, using your favourite texteditor, to `/etc/fstab`, otherwise this new partition won't be mounted automatically at boot. In our example you add this line at the end of `/etc/fstab`

```
/dev/vg_data/lv_video  /skole/video          ext3    defaults          0          2
```

Now you test your new partition by mounting it manually with **`mount /skole/video`**. Have a look at the size with

`df -h /skole/video`

8.5.8.1. Adding the New Volume to autofs

Not tested with Sarge

This has not yet been tested with Sarge.

This warning will go away once it has been tested.

Skolelinux/Debian-edu uses autofs to export partitions to machines that might need them, workstation and thinclientserver needs to be able to mount the users home directories. So, if you have made another home partition, for example `/skole/tjener/home1` and `/skole/tjener/home2` then you must make sure that they are also exported along with `/skole/tjener/home0` via autofs to the needed machines. The necessary information lies in the LDAP-database, so we must add this new information the LDAP-database. This is most easily done by adding this new information to a file, and then adding the contents of this file to our LDAP-database. Let's call this file `/root/video.ldif`, with these contents:

```
dn: cn=video,ou=tjener,ou=skole,ou=Automount,dc=skole,dc=skolelinux,dc=no
objectClass: top
objectClass: automount
cn: video
automountInformation: -rw,rsiz=8192,wsiz=8192,intr tjener:/skole/video
description: /skole/video mount point
```

This is the info that you want to add, like this:

```
/etc/init.d/slaped stop
/etc/init.d/nscd stop
slapadd -l /root/video.ldif
/etc/init.d/slaped start
/etc/init.d/nscd start
```

In addition, this partition must be added to the export file by adding the following line to the file

```
/etc/exports
```

```
/skole/video @ltsp-server-hosts(rw,async) @workstation-hosts(rw,async) @server-hosts(rw,asy
```

After that you must run **exportfs -ra**

8.5.9. Adding a New Disk to LVM in Skolelinux/Debian-edu

Hook up the new disk to the system. In this example, it becomes `/dev/hdb`, and we will add it to the volume group `vg_data`

We will add the whole disk, without partitioning it first.

First lets use the command **pvscan** to se what we have

```
tjener:/dev# pvscan
PV /dev/hda6   VG vg_data      lvm2 [1.94 GB / 800.00 MB free]
PV /dev/hda5   VG vg_system    lvm2 [2.73 GB / 692.00 MB free]
Total: 2 [4.67 GB] / in use: 2 [4.67 GB] / in no VG: 0 [0   ]
```

Then we create a volume group descriptor on the disk, using the command **pvcreate**

```
tjener:/dev# pvcreate /dev/hdb
Physical volume "/dev/hdb" successfully created
```

Then we add the whole disk `/dev/hdb` to the volume-group **vg_data** using the command

```
tjener:/dev# vgextend vg_data /dev/hdb
Volume group "vg_data" successfully extended
```

Then we use **pvscan** again to verify that we indeed have managed to successfully add `/dev/hdb` to `vg_data`

```
tjener:/dev# pvscan
PV /dev/hda6   VG vg_data    lvm2 [1.94 GB / 800.00 MB free]
PV /dev/hdb    VG vg_data    lvm2 [6.83 GB / 6.83 GB free]
PV /dev/hda5   VG vg_system  lvm2 [2.73 GB / 692.00 MB free]
Total: 3 [11.50 GB] / in use: 3 [11.50 GB] / in no VG: 0 [0  ]
```

That looks nice, now we may resize any of the lv-groups `lv_home` or `lv_backup` with more than the original 800MB that we had free. Lets se if we can manage to increase `/skole/backup` with 1000M, which should then make `/skole/backup` span across two different disks.

```
tjener:~# umount /skole/backup/
tjener:~# e2fsck -fy /dev/vg_data/lv_backup
tjener:~# resize2fs /dev/vg_data/lv_backup
tjener:~# lvextend --size +1000M /dev/vg_data/lv_backup
tjener:~# mount /skole/backup/
tjener:~# df -h /skole/backup
Filesystem              Size  Used Avail Use% Mounted on
/dev/mapper/vg_data-lv_backup
                        1.7G   17M  1.6G   2% /skole/backup
tjener:~# pvscan
PV /dev/hda6   VG vg_data    lvm2 [1.94 GB / 0    free]
PV /dev/hdb    VG vg_data    lvm2 [6.83 GB / 6.64 GB free]
PV /dev/hda5   VG vg_system  lvm2 [2.73 GB / 692.00 MB free]
Total: 3 [11.50 GB] / in use: 3 [11.50 GB] / in no VG: 0 [0  ]
```

As you can see, `/skole/backup` is now 1G bigger, and there is 0 Free in `/dev/hda6` while there is still place in `/dev/hdb` for `vg_data` to grow.

8.5.10. Activating the lvm-volumes from a KNOPPIX cd

Sometimes things go horribly wrong, and your system ends up being really hosed. In such a case it is very often lifesaving having a KNOPPIX cd lying about.

I trust you did download/order a KNOPPIX cd as I suggest you do in Section 6.1

I use KNOPPIX_V4.0 in this example, but any other recent version of KNOPPIX or any similar live-cd should probably also work just as well

Boot up your non-optimal-working system. I prefer to just use runlevel 2 (no GUI), that boots much faster than a full GUI, and I don't need any mouse. So you can either just press **Enter** to boot full GUI KNOPPIX.

Once you have booted KNOPPIX, make sure you have Internet connectivity, the command **ifconfig** will tell. If you don't have any ip-address, then run the command **netcardconfig** and just follow the instructions. You need a functional network because we need to download some packages.

apt-get update

You might see a few error messages at this point, something relating to Ndiswrapper, never mind those.

apt-get install lvm2 lvm-common

Now we may activate the lvm-groups and volumes

```
modprobe dm-mod  
ln -s /lib/lvm-200/ /usr/sbin/  
vgscan  
vgchange -a y
```

If everything went well, you should see some info about KNOPPIX having found your lvm-groups.

Lets assume that you have an IDE disk as master on channel 1, which would you make your disk a hda.

We need to mount it, but first we must make a mountpoint

```
mkdir /mnt/lvm  
mount /dev/hda1 /mnt/lvm
```

Now you may begin mounting those lvm-partitions you have, like

```
mount /dev/vg_data/lv_home0 /mnt/lvm/skole/tjener/home0
```

Now you can use tools such as scp, ssh and tar to transfer files over to another machine. Have a look at Section 9.3 for more info about how to use these tools. For now I'll just say that if you want to transfer the whole content of /skole/tjener/home0, which holds all you users files, over to another linux-machine with ip-address 10.0.2.50 and there place it in /backup, this command will do that

```
tar czvf - /mnt/lvm/skole/tjener/home0 | ssh root@10.0.2.50 "cat >/backup/home0.tgz"
```


8.6. Editing Host Netgroups

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A "host netgroup" (hence "netgroup") can be compared to a guest list when you are inviting people to a party. You have made the guest list to avoid unwanted guests, for instance crooks. In a computer network, the guests are a bit different. They are "Internet hosts", e.g. printers, thin client servers or workstations. If these hosts are on the guest list, they are welcome to do their task on the network. If they are not, they are automatically kept out by the doorkeeper.

A netgroup thus keeps track of the guests, or "hosts" in "Internet lingo". It can also keep track of other netgroups, and this simplifies administration of, for example, access to the Internet or to a file server. It is much easier to administer groups of hosts than specifying every single host everywhere.

You have to use netgroups correctly to avoid extra administration. For example, it is useless to have a netgroup named "workstation-hosts" with 250 different hosts in it. It is better to use subgroups. The workstations could be grouped into "computerlab01-hosts", "computerlab02-hosts" and "teachers-hosts", and these could be subgroups to another netgroup named "workstation-hosts".

In the future, Skolelinux will probably use netgroups for various other tasks. Today they are used to prevent access of unwanted guests to the file server.

8.6.1. The Netgroup Module

To edit netgroups, you have to use Webmin. The module is named "Edit host netgroups" and is found under the "System"-tab.

Figure 8-4. Overview of Netgroups

FIXME 39: description of image

On a newly-installed Skolelinux server, the following netgroups are added:

ltsp-server-hosts

All of the thin client servers in the network

printer-hosts

All of the printers in the network

server-hosts

All of the servers in the network. This is primarily "tjener", but if you move, for example, the backup service to another host, add that host here.

workstation-hosts

All of the groups containing workstations, or all of the workstations in a small network

all-hosts

This group contains no individual hosts, but all of the other netgroups.

Naming Conventions: Note that all of the netgroup names end with "-hosts". This is to make it easier to distinguish netgroups from other groups whenever necessary. We suggest you use the same naming convention.

8.6.2. Adding Hosts to a Netgroup

In the overview, click on the netgroup you want to change. A new window appears, showing hosts, subgroups and netgroups available to add as subgroups and an area for adding new hosts.

Figure 8-5. Adding Hosts to a Netgroup

FIXME 40: description of image

Enter the name on a line of its own for every host you want to add to the netgroup.

If you check the "Verify validity of hosts" box, every hostname will be tested but only valid ones will be added. Note: this may slow down the process.

If you check the "Make sure the hostnames can be used by the file server" box, every hostname will be tested but only those usable to the file server will be added. Note: this may slow down the process.

Click on "Add" to add the entered hosts to the netgroup. You will see the same page, but with the new hosts included in the list.

Figure 8-6. New hosts Added to the Netgroup

FIXME 41: description of image

Click on "Back" when you are finished editing the netgroup. Remember to save your changes.

8.6.3. Saving Changes

Return to the overview when you are finished making your changes. Notice the actions in the action queue. When you are done, enter your LDAP-password and click on "Execute actions". The changes are sent to the catalogue server, and you get a new window showing the replies from the server. For every successful action, the server replies "Success".

You can remove actions you regret or made by mistake. Select the actions you want to remove from the queue and click on "Delete selected actions". Actions depending on those removed will not be executed. If you remove, for example, the action "Add netgroup 'computerlab01-hosts'", then the action "Add host(s) (dhcp123, dhcp124, dhcp125)" will not be executed.

Figure 8-7. Changes are Saved

FIXME 42: description of image

8.6.4. Adding a New Netgroup

Enter the name of the new netgroup in the "Name of group" text field in the "New group"-area and click on "Create group". The name has to be between 9 and 40 characters and contain only alphanumeric characters and hyphens.

Figure 8-8. Adding a New Netgroup

FIXME 43: description of image

The new netgroup is now listed together with the other groups.

Figure 8-9. New Group Added

FIXME 44: description of image

8.6.5. Adding a Subgroup

In the overview, click on the group to which you want to add subgroups. If you want to add "computerlab01-hosts" as a subgroup to "workstation-hosts", click on "workstation-hosts".

Figure 8-10. Adding a Subgroup

FIXME 45: description of image

Select the group you want to add as a subgroup and click on "Add selected groups". The subgroups are now listed as a subgroup.

Figure 8-11. Subgroup Added

FIXME 46: description of image

Remember to save your changes.

8.6.6. Deleting a Netgroup

In the overview, select the netgroups you want to remove and click on "Delete selected groups".

Remember to save your changes.

8.6.7. Removing Hosts from a Netgroup

In the overview, click on the group you want to change. Select the hosts you want to remove and click on "Remove selected hosts".

Remember to save your changes.

8.6.8. Removing a Subgroup

In the overview, click on the group you want to change. Select the subgroups you want to remove and click on "Remove selected subgroups".

Remember to save your changes.

8.7. Thin Client Setup

Each thin client has a wide range of options that can be changed on an individual thin client basis.

- Video card
- PXE-network card or regular network card
- Will it act as a print server?
- Serial, PS/2 , USB or scrollmouse?

A really useful program is the package `ltsp-utils`. With that installed you can reboot or shutdown the thinclients from the server, and query info such as amount of memory, type of videocard, processor and so on, all without having to go to where the thinclients are placed physically. Install in with

```
apt-get install ltsp-utils
```

All these options are specified in the file `/opt/ltsp/i386/etc/lts.conf`, but you need to assign each thin client a static IP address. You do this by adding the MAC address of the network card in your thin client, all done in the file `/etc/dhcp3/dhcpd.conf`. There is also a Webmin module for this operation, <https://tjener.intern:10000/dhcpd3/index.cgi>

8.7.1. Assigning a thinclient a Static IP address

8.7.2. Creating Etherboot ROM Images for Ordinary (non-PXE) network cards.

I strongly advise you to use PXE cards, which eliminate the need for the use of failure-prone media such as floppy disks. But if you have to use floppy disks to boot your thin clients, then there are some small tricks to learn. The floppy disks you need, are ready and available for download at rom-o-matic.com (<http://rom-o-matic.com/>). The latest stable version that is known to work well with Skolelinux/Debian-edu is **5.0.11**, which is the recommended one.

There are two things you need to do::

- Find the correct ROM for your network card. There are over 250 on the list of available network cards, which makes the whole point of PXE very appealing.
- Once you have managed to find the correct ROM for your network card, you need to put it on a floppy disk, on a Linux machine, as root

```
cat eb-5.2.5-yournic.zdisk > /dev/fd0
```

8.7.3. Special Floppy Disk with Support for 30 network cards

This floppy disk image contains the ROM for the 30 most popular and widely-used network cards, which means that there is a big chance that you don't need to fiddle around trying to figure out what kind of network card you have.

This floppy disk is a part of the project *Thinstation* (<http://sourceforge.net/projects/thinstation/>), from there you download "Universal boot floppy". The file you have downloaded should be `BootDisk522b.zip`. In Windows you use a zip program to unpack it. In Skolelinux/Debian-edu you unpack it with **unzip BootDisk522b.zip**, (you may need to install unzip, **apt-get install unzip**). While unzipping the file you should see something like this:

```
tjener:~# BootDisk522b.zipunzip BootDisk522b.zip
Archive:  BootDisk522b.zip
  inflating: rawrite2.exe
  inflating: ebnet522.dsk
  inflating: Readme.txt
```

In the file `Readme.txt` you will find detailed information about how the universal boot floppy is made, together with how you can make one yourself. As root, you can make one with the command

```
cp ebnet522.dsk /dev/fd0
```

8.7.4. Using the MAC Address to Assign a Fixed IP Number to a Thin Client

In order to be able to specially customize your various thin clients, you have to be able to identify each of them separately. You can do this with the help of each thin client's network card and its unique MAC address (which every network card has).

Most (but not all) network cards have their respective MAC addresses printed on them somewhere. It often looks something like 0000864A585A, or 00-00-86-4A-58-5A, or 00:00:86:4A:58:5A, which are

numbers given in the hexadecimal system. If you don't see anything like that printed on the card, then you can have a look at the file `/var/log/syslog`, where the thin client's MAC address is registered when it tries to start up. To see what is being logged at the time the thin client starts up, use the command

```
tail -f /var/log/syslog
```

then you will see something like

```
Jan  4 19:04:44 tjener dhcpd-2.2.x: DHCPDISCOVER from 00:00:86:4a:58:5a via eth1
Jan  4 19:04:44 tjener dhcpd-2.2.x: DHCPOFFER on 192.168.0.201 to 00:00:86:4a:58:5a via eth1
Jan  4 19:04:45 tjener dhcpd-2.2.x: DHCPREQUEST for 192.168.0.201 from 00:00:86:4a:58:5a via eth1
Jan  4 19:04:45 tjener dhcpd-2.2.x: DHCPACK on 192.168.0.201 to 00:00:86:4a:58:5a via eth1
```

Here you can see the MAC address, together with the IP number given to each thin client.

If you have enabled a shell on the thinclient, you can use the command **ifconfig** directly on the thinclient to see that MAC-address it have. To enable a shell on the thinclient, you must have this line in your `/opt/ltsp/i386/etc/ltsp.conf` put it under the section [Default]

```
SCREEN_02          = shell
```

After you have added this line to `/opt/ltsp/i386/etc/ltsp.conf` you must reboot the thinclient. Then you access the shell directly on the thinclient with the keyboard combination **ALT-F2** and use **ALT-F1** to return. Once in the shell directly on the thinclient, use the command **ifconfig**, look for something similar to

```
HWaddr 00:00:86:4A:58:5A
```

Now that you know the MAC address, you can type it in the file `/etc/dhcp3/dhcpd.conf` for example

```
host ltsp010 {
    hardware ethernet    00:00:86:4a:58:5a;
    fixed-address        192.168.0.10;
#filename               "/tftpboot/lts/vmlinuz-2.4.19-ltsp-1";
    filename             "/tftpboot/lts/pxelinux.0";
    #option option-128   e4:45:74:68:00:00;
    #option option-129   "NIC=3c509";
}
```

After you have typed in the MAC address, then you must restart the DHCP server, which is done with the command

```
/etc/init.d/dhcp3-server restart
```

In this case I have decided that the thin client with the MAC address 00:00:86:4a:58:5a should be named **ltsp010** and be given the IP number 192.168.0.10. The names ltspXXX *cannot* be changed to something else,³ for example room203. It won't work.

Remember that a hash-mark (#) before a line in a file `/etc/dhcp3/dhcpd.conf` is used as a comment symbol, which means that this line is just a comment. In this case I have put a comment symbol at the start of the line

```
#filename "/tftpboot/lts/vmlinuz-2.4.26-ltsp-2";
```

while at the start of the line

```
filename "/tftpboot/lts/pxelinux.0";
```

there is no comment symbol. This means that this thin client has a network card of the type **PXE**, so it must have an image when it starts up `pxelinux.0`. If it didn't have a **PXE-network card**, but instead a normal card that needs an Etherboot floppy, see Section 2.4, then it would need the start up image `vmlinuz-2.4.26-ltsp-2`

Another choice you can make for each single thin client in this file is to activate (that is, remove the comment symbol) at the beginning of

```
option option-128 e4:45:74:68:00:00;
option option-129 "NIC=3c509";
```

if and only if you have a **3com509** ISA network card in your thin client.

8.7.5. Customising Thin Clients

In the file `/opt/ltsp/i386/etc/lts.conf` you have the possibility to specially customize each individual thin client. You can also make adaptations that cover all of the clients at once.

Here I want you to note that there is already a large document which describes how to set up thin clients *ltsp.org* (<http://www.ltsp.org>) Look in the documentation menu.

I have only mentioned the most important changes you can make in `/opt/ltsp/i386/etc/lts.conf`. I recommend that everyone should read the documentation that is found at <http://www.ltsp.org>

8.7.5.1. Printer Connected to a Thin Client

In order to specify that you have a printer connected to the parallel port of a thin client, the following lines must be added to the file `/opt/ltsp/i386/etc/lts.conf` :

```
[ltsp050]
PRINTER_0_DEVICE = /dev/lp0
```



```
PRINTER_0_TYPE    =P
```

exchange **ltsp050** with the correct name of your thin client. See part Section 9.1.1.

8.7.5.2. Serial Mouse

Add the following to the file `/opt/ltsp/i386/etc/lts.conf` if you have a serial mouse (connected to the COM port)

```
[ltsp051]
X_MOUSE_PROTOCOL    = "Microsoft"
X_MOUSE_DEVICE      = "/dev/ttyS0"
X_MOUSE_RESOLUTION  = 400
X_MOUSE_BUTTONS     = 2
X_MOUSE_EMULATE3BTN = Y
```

8.7.5.3. Optical USB Mouse with Wheel

Add these lines to `/opt/ltsp/i386/etc/lts.conf`

```
X_MOUSE_PROTOCOL    = "ImPS/2"
X_MOUSE_DEVICE      = "/dev/input/mice"
```

8.7.5.4. Scrolling Mouse

Add the following to `/opt/ltsp/i386/etc/lts.conf` if you have a scrolling mouse

```
[ltsp052]
X_MOUSE_PROTOCOL    = "ImPS/2"
```

It's not certain that this will make the wheel function; it may make your mouse go absolutely crazy.

8.7.5.5. Video Card Driver

Some video cards cannot be configured automatically. This is especially true of older video cards. So it may often be necessary to specify which video card driver must be used. Sometimes it may also be necessary to specify that an older version of XFree86 must be used. For example, with the Compaq Deskpro 4000 machine, an older version of XFree86 must be used, so for this type of video card we have to add the following lines to `/opt/ltsp/i386/etc/lts.conf`

```
[ltsp054]
```

```
XSERVER=XF86_SVGA
```

8.7.5.6. Screen Resolution

Sometimes it may be desirable to use a different resolution than 1024x768 which is normally the standard for thin clients. Not every video card can manage that resolution. It would also appear a little weird on 14" or 15" screens where 800x600 fits better. These files in `/opt/ltsp/i386/etc/lts.conf` make that possible:

```
[ltsp060]
X_MODE_0=800x600
```

8.7.5.7. Using the package ltsp-utils

The package `ltsp-utils` is a great tool when it comes to administrating the thinclients without too much footjob. With it you can reboot/shutdown the clients, and query the contents of their `/proc` filesystem, which contains plenty of useful stuff. First you must activate it, you have the choice of activating the reading of `/proc` and the possibility to reboot/shutdown. It's configured in the file `/opt/ltsp/i386/etc/lts.conf`, placed it under the section `[Default]`

```
ALLOW_SHUTDOWN      = Y
ALLOW_PROCREAD       = Y
```

With **ALLOW_SHUTDOWN = Y** you may reboot/shutdown your thinclients using the commands

```
ltspinfo --reboot -h ltsp040
ltspinfo --shutdown -h ltsp040
```

If you have **ALLOW_PROCREAD = Y** you may query the `/proc` filesystem on the thinclients, like this:

```
tjener:~# ltspinfo --proc=meminfo -h ltsp040
      total:      used:      free:  shared: buffers:  cached:
Mem:  130322432 20234240 110088192          0    65536 11264000
Swap:  33550336          0 33550336
```

```
tjener:~# ltspinfo --proc=cpuinfo -h ltsp040
processor      : 0
vendor_id     : GenuineIntel
cpu family    : 6
model         : 6
model name    : Celeron (Mendocino)
stepping      : 0
```

```
cpu MHz          : 332.901
```

```
tjener:~# ltspinfo --cfg=ALL -h ltsp040
export LTSP_LOCAL_APPS="N"
export LTSP_USE_NFS_SWAP="Y"
export LTSP_HOSTNAME="ltsp040"
export LTSP_DEFAULT_SERVER="192.168.0.254"
export LTSP_KERNEL_VERSION="2.4.26-ltsp-2"
export LTSP_TYPE_0=" "
export LTSP_TYPE_1=" "
export LTSP_TYPE_2=" "
export LTSP_DNS_SERVER="192.168.0.254"
export LTSP_NFS_SERVER="192.168.0.254"
export LTSP_SWAPFILE_SIZE="32m"
export LTSP_SYSLOG_HOST="192.168.0.254"
export LTSP_SNMPD=" "
export LTSP_SOUND=" "
export LTSP_XDM_SERVER="192.168.0.254"
export LTSP_XSERVER="mga"
export LTSP_DISABLE_ACCESS_CONTROL="N"
```

```
tjener:~# ltspinfo --proc=modules -h ltsp040
usbkbd          3256    0 (unused)
hid             14184   0 (unused)
usbmouse        1912    0 (unused)
mousedev        3924    1
keybdev         1952    0 (unused)
input           2976    0 [usbkbd hid usbmouse mousedev keybdev]
usb-uhci        20844   0 (unused)
usbcore         55520   0 [usbkbd hid usbmouse usb-uhci]
nfsswap         2524    1
8139too         13256   1
mii             2112    0 [8139too]
crc32           2848    0 [8139too]
```

```
tjener:~# ltspinfo --proc=bus/pci/devices -h ltsp040 |cut -c6-13
80867180
80867181
80867110
80867111
80867112
80867113
10ec8139
102b1001
```

All these is useful commands for diagnostic purposes and for finetuning your thinclients.

Warning

Be *very* careful when using **ALLOW_SHUTDOWN = Y**, because everybody on your system can then reboot/shutdown a thinclient, regardless if someone is logged in at that thinclient.

If you just need this feature for testing on a particular thinclient, then place the lines under [ltspXXX] instead of under [Default]

8.8. Do the Network Cards Work?

With the command

ifconfig

you can see the current condition of the network cards.

Tip: This command is also good for finding out which IP address the machine has, as well as its MAC address (which is called "HWaddr"). Another way to collect MAC addresses is to have a look at the syslog file at the time that you start up the machine whose MAC address you want to find. Then all you have to do is cut and paste. Use the command, as root,

tail -f /var/log/syslog

then you will see something like

```
Jun  2 22:52:28 tjener dhcpd-2.2.x: DHCPDISCOVER from 00:02:b3:8f:66:76 via eth1
Jun  2 22:52:28 tjener dhcpd-2.2.x: DHCPOFFER on 192.168.0.13 to 00:02:53:8f:66:76 via eth1
Jun  2 22:52:29 tjener dhcpd-2.2.x: DHCPREQUEST for 192.168.0.13 from 00:02:53:8f:66:76 via eth1
Jun  2 22:52:29 tjener dhcpd-2.2.x: DHCPACK on 192.168.0.13 to 00:02:53:8f:66:76 via eth1
```

Use **CTRL-C** to stop the process.

This is what the output from the **ifconfig** on a mainserver should look:

```
tjener:~# ifconfig
eth0      Link encap:Ethernet  HWaddr 00:04:75:81:AA:78
          inet addr:10.0.2.2  Bcast:10.0.3.255  Mask:255.255.254.0
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:27892 errors:0 dropped:0 overruns:0 frame:0
          TX packets:26194 errors:0 dropped:0 overruns:0 carrier:0
          collisions:5 txqueuelen:100
          RX bytes:23495725 (22.4 MiB)  TX bytes:2810447 (2.6 MiB)
          Interrupt:11 Base address:0xdc00
```

```

lo          Link encap:Local Loopback
            inet addr:127.0.0.1  Mask:255.0.0.0
            UP LOOPBACK RUNNING  MTU:16436  Metric:1
            RX packets:44174 errors:0 dropped:0 overruns:0 frame:0
            TX packets:44174 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:0
            RX bytes:11789085 (11.2 MiB)  TX bytes:11789085 (11.2 MiB)

```

While the output from **ifconfig** should look like this on a thinclient server:

```

eth0        Link encap:Ethernet  HWaddr 00:30:05:75:95:5E
            inet addr:10.0.2.10  Bcast:10.0.3.255  Mask:255.255.254.0
            inet6 addr: fe80::230:5ff:fe75:955e/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:9749550 errors:0 dropped:0 overruns:0 frame:0
            TX packets:12174337 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:851989409 (812.5 MiB)  TX bytes:3820253778 (3.5 GiB)
            Interrupt:169

eth1        Link encap:Ethernet  HWaddr 00:0E:0C:59:5E:84
            inet addr:192.168.0.254  Bcast:192.168.0.255  Mask:255.255.255.0
            inet6 addr: fe80::20e:cff:fe59:5e84/64 Scope:Link
            UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
            RX packets:430966587 errors:0 dropped:0 overruns:0 frame:0
            TX packets:511993119 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:1000
            RX bytes:584433596 (557.3 MiB)  TX bytes:361859667 (345.0 MiB)
            Base address:0x2800 Memory:fc420000-fc440000

lo          Link encap:Local Loopback
            inet addr:127.0.0.1  Mask:255.0.0.0
            inet6 addr: ::1/128 Scope:Host
            UP LOOPBACK RUNNING  MTU:16436  Metric:1
            RX packets:269981 errors:0 dropped:0 overruns:0 frame:0
            TX packets:269981 errors:0 dropped:0 overruns:0 carrier:0
            collisions:0 txqueuelen:0
            RX bytes:126747627 (120.8 MiB)  TX bytes:126747627 (120.8 MiB)

```

If what you see is similar to the above, but you still can't get on the net, then you may have to do something with your DNS-setup. Have a look at this section in the documentation about Coyote Linux, Section 3.11.

Sometimes "someone" tries to change the configuration of the network card **eth0** on the Main-server *:do not do that!* If you despite this advice have tried to change the **eth0** setup, and things mysteriously stops working, then most likely your `/etc/resolv.conf` is messed up and wrong.

The file `/etc/resolv.conf` should on a Main-server look like this:

```
tjener:~# more /etc/resolv.conf
search intern
nameserver 127.0.0.1
```

8.9. Administration of Packages

In order to install packages, you need to define where you want to get them from, where your package reservoir is.

You define your package reservoir in the file `/etc/apt/sources.list`

The format for the line in this file follows a specific syntax. If you type a line wrong, then you will get a pretty good error message when you try to update the database for the available packages. It will give you a clear message about which line in the file is incorrect.

In this file, you use the hash-mark (#) at the beginning of the line as a signal that this line is only a comment, that is, that this line should be skipped. This technique of "commenting out" is typical for most configuration files in Linux; other symbols used for this purpose are the semicolon (;) and the double slash (//).

You can either work with package administration via the command line or with the help of a graphical application such as KPackage 5, or Webmin 10

A quick introduction to the use of the command line for working with package administration is given in this section.

This is the content of the file that contains the information about your package reservoir:

```
#deb file:///cdrom/ sarge main local

deb cdrom:[Debian GNU/Linux edu _Sarge_ - Unofficial i386 Binary-1 (20050808)]/ unstable co

# deb http://security.debian.org/ stable/updates main contrib non-free
#deb http://security.debian.org/ sarge/updates main contrib non-free
### Use (by uncommenting) either http or ftp, NOT both
### http based apt source: -----
# deb http://ftp.debian.org/debian/ sarge main contrib non-free
# deb http://non-us.debian.org/debian-non-US/ sarge/non-US main contrib non-free
# deb http://ftp.skolelinux.no/skolelinux/ sarge local
### ftp based apt source: -----
```

```
# deb ftp://ftp.debian.org/debian/ sarge main contrib non-free
# deb ftp://non-us.debian.org/debian-non-US/ sarge/non-US main contrib non-free
# deb ftp://ftp.skolelinux.no/skolelinux/ sarge local
```

Notice that the only line *without* a #-sign in the front is the line that says to use the cdrom that you used during installation. No other reservoir are activated. The first thing you should do is to activate the line that enables security upgrades, then some more reservoirs so that you can install additional packages.

For a start you can make it look like this:

```
#deb file:///cdrom/ sarge main local

#deb cdrom:[Debian GNU/Linux edu _Sarge_ - Unofficial i386 Binary-1 (20050808)]/ unstable c

#deb http://security.debian.org/ stable/updates main contrib non-free
deb http://security.debian.org/ sarge/updates main contrib non-free
### Use (by uncommenting) either http or ftp, NOT both
### http based apt source: -----
deb http://ftp.debian.org/debian/ sarge main contrib non-free
deb http://non-us.debian.org/debian-non-US/ sarge/non-US main contrib non-free
deb http://ftp.skolelinux.no/skolelinux/ sarge local
### ftp based apt source: -----
# deb ftp://ftp.debian.org/debian/ sarge main contrib non-free
# deb ftp://non-us.debian.org/debian-non-US/ sarge/non-US main contrib non-free
# deb ftp://ftp.skolelinux.no/skolelinux/ sarge local
```

Notice that I placed a #-sign in front of the line containing "deb: cdrom", no need to install from cdrom when you have it available from the Internet.

If you add new lines to this file, then you have to update the database that contains information about what is available.

See Chapter 13 for other lines that you can add as sources for packages.

8.9.1. Updating the Database with Info About Available Packages

The selection of available packages changes constantly. New packages become available; newer versions of packages appear, etc. So it is necessary to make sure that the database that contains information about the packages is kept constantly up-to-date. This is done with the command

apt-get update

```
tjener:~# apt-get update
Get:1 http://ftp.skolelinux.no sarge/local Packages [17.4kB]
Ign http://ftp.skolelinux.no sarge/local Release
Get:2 http://non-us.debian.org sarge/non-US/main Packages [20B]
Get:3 http://non-us.debian.org sarge/non-US/main Release [102B]
```

```
Get:4 http://non-us.debian.org sarge/non-US/contrib Packages [20B]
Get:5 http://non-us.debian.org sarge/non-US/contrib Release [105B]
Get:6 http://non-us.debian.org sarge/non-US/non-free Packages [20B]
Get:7 http://non-us.debian.org sarge/non-US/non-free Release [106B]
Get:8 http://ftp.debian.org sarge/main Packages [3347kB]
Get:9 http://security.debian.org sarge/updates/main Packages [155kB]
Get:10 http://security.debian.org sarge/updates/main Release [110B]
Get:11 http://security.debian.org sarge/updates/contrib Packages [538B]
Get:12 http://security.debian.org sarge/updates/contrib Release [113B]
Get:13 http://security.debian.org sarge/updates/non-free Packages [20B]
Get:14 http://security.debian.org sarge/updates/non-free Release [114B]
Get:15 http://ftp.debian.org sarge/main Release [95B]
Get:16 http://ftp.debian.org sarge/contrib Packages [56.2kB]
Get:17 http://ftp.debian.org sarge/contrib Release [98B]
Get:18 http://ftp.debian.org sarge/non-free Packages [58.4kB]
Get:19 http://ftp.debian.org sarge/non-free Release [99B]
Fetched 3635kB in 23s (157kB/s)
Reading Package Lists... Done
```

You should always run this command *before* you upgrade or add new packages.

8.9.2. Upgrading All Installed Packages to a Newer Version

Sometimes you will see a message concerning changes (Changelog) that concerns the packages that you are about to install/upgrade, such as

```
unzip (5.50-1woody4) oldstable-security; urgency=low

* Fixed CAN-2005-2475 again. Patch backported from 5.52-5.
* Changed unzip banner line. This is a modified release.
```

:

Use the **SPACEBAR** on the keyboard to page through to the end of the message, where you will see

```
* Fixed toctou vulnerability, CAN-2005-2475.
```

(END)

Press the **Q**-key, for Quit, and then you will see

```
Fetchd 60.2MB in 11m24s (87.9kB/s)
Reading changelogs... Done
apt-listchanges: Do you want to continue? [Y/n]?
```

In order to continue you must press **Y**, for Yes.

All of the packages that have already been installed can be upgraded to a newer version with the command

apt-get upgrade

```
tjener:~# apt-get upgrade
Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be upgraded:
  apache apache-common apache2-utils bsutils cfengine cfengine-doc courier-authdaemon cour
  courier-ssl cpio debian-edu-config debian-edu-install education-common education-main-ser
  libmysqlclient12 libpam-ldap libpcres3 libsensors3 libsm6 libsnmp-base libsnmp5 libssl10.9.
  libxp6 libxpm4 libxrandr2 libxt6 libxtrap6 libxtst6 localization-config lynx mount mysql-
  slbackup snmp squid squid-common tcpdump util-linux xdebconfigurator xfree86-common xlibs
62 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
Need to get 23.7MB of archives.
After unpacking 225kB disk space will be freed.
```

Do you want to continue? [Y/n]

Just pressing **Enter** or pressing 'Y' and then **Enter** will download all these packages, and automatically install them for you. Maybe there will be a changelog displayed before the upgrade will start.

Warning

Sometimes it's really nice to know what is actually going to happen *before* you start to upgrade all installed packages. It's possible that it's not the right moment for you to start downloading several large packages. Maybe you need to wait until there is more bandwidth available. If you run

apt-get upgrade --simulate

then nothing will actually happen- the upgrade will only be simulated. If there is too much information on the screen, then you can try

apt-get upgrade --simulate | more

If it looks fine, then you run the above command again, taking away the **--simulate**

It's also a good thing to consider using **aptitude dist-upgrade** in combination with **apt-get upgrade**, or instead of.

Once you are done with the upgrade, you should delete the packages that have been downloaded and placed in `/var/cache/apt/archives/`, you delete these with the command

apt-get clean

If you don't do this regularly the partition `/var` will fill up.

8.9.3. Overview of Installed Packages

You can get an overview of installed packages using the command

dpkg --list | more

Be aware that the first two letters indicate the status of the package; "ii" means that it is fully installed.

If you are looking for a specific package, to find out if it is installed, or what version you have installed, use **grep** to search for it:

```
tjener:~# dpkg --list | grep apache
ii apache          1.3.33-6          versatile, high-performance HTTP server
```

```
ii  apache-common  1.3.33-6      support files for all Apache webrowsers
ii  apache2-utils  2.0.54-4      utility programs for webrowsers
```

8.9.4. Finding the Name of a Specific Package

If you don't remember the name of a package, you can do a search of the database with the command

apt-cache search <packagename>

If there is too much text on the screen, then you can try

apt-cache search <packagename>|more

The two symbols < and > must *not* be used. They are only used in this example.

```
tjener:~# apt-cache search apache
apache - versatile, high-performance HTTP server
apache-common - support files for all Apache webrowsers
apache-dbg - debug versions of the Apache webrowsers
apache-dev - development kit for the Apache webserver
apache-doc - documentation for the Apache webserver
apache-perl - versatile, high-performance HTTP server with Perl support
apache-ssl - versatile, high-performance HTTP server with SSL support
apache-utils - utility programs for webrowsers (transitional package)
```

So you see there is much more related to apache than those few packages already installed on the system.

8.9.5. Showing Available Information about a Package

The commands

apt-cache showpkg <packagename>

and

apt-cache policy <packagename>

will give you detailed info about the package.

```
tjener:~# apt-cache showpkg kdisser
Package: kdisser
Versions:
0.3.8-1 (/var/lib/apt/lists/ftp.debian.org_debian_dists_sarge_main_binary-i386_Packages)
```

```
Reverse Depends:
Dependencies:
0.3.8-1 - kdelibs4 (2 4:3.3.2-4.0.2) libc6 (2 2.3.2.ds1-4) libgcc1 (2 1:3.4.1-3) libqt3c102
Provides:
0.3.8-1 -
Reverse Provides:
tjener:~# apt-cache policy kdisser
kdisser:
  Installed: (none)
  Candidate: 0.3.8-1
  Version Table:
    0.3.8-1 0
    500 http://ftp.debian.org sarge/main Packages
```

So you see the package `kdisser` is not installed, but is available for installation in version 0.3.8-1 from <http://ftp.debian.org sarge/main>

8.9.6. Installing a Package

When you have found the package you want, install it with the command

```
apt-get install <packagename>
```

If you want to see what will happen when you install it, you can first run a simulation with the command

```
apt-get install <packagename> --simulate
```

```
tjener:~# apt-get install aterm --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
The following NEW packages will be installed:
  aterm
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Inst aterm (0.4.2-11 Debian:3.1r0/stable)
Conf aterm (0.4.2-11 Debian:3.1r0/stable)
tjener:~# apt-get install aterm
Reading Package Lists... Done
Building Dependency Tree... Done
The following NEW packages will be installed:
  aterm
0 upgraded, 1 newly installed, 0 to remove and 0 not upgraded.
Need to get 91.6kB of archives.
After unpacking 287kB of additional disk space will be used.
Get:1 http://ftp.debian.org sarge/main aterm 0.4.2-11 [91.6kB]
Fetched 91.6kB in 1s (71.0kB/s)
Selecting previously deselected package aterm.
```

```
(Reading database ... 32924 files and directories currently installed.)
Unpacking aterm (from .../aterm_0.4.2-11_i386.deb) ...
Setting up aterm (0.4.2-11) ...
```

8.9.7. Removing an Installed Package

To find the specific package that you want to remove, use the commands that were mentioned earlier for finding the name of the package.

When you know the name of the package, then you can remove it simply with the command

apt-get remove <packagename>

If you want to see what is going to happen when you remove the package, you can run a simulation first with the command

apt-get remove <packagename> --simulate

```
tjener:~# apt-get remove aterm --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be REMOVED:
  aterm
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
Remv aterm (0.4.2-11 Debian:3.1r0/stable)
tjener:~# apt-get remove aterm
Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be REMOVED:
  aterm
0 upgraded, 0 newly installed, 1 to remove and 0 not upgraded.
Need to get 0B of archives.
After unpacking 287kB disk space will be freed.
Do you want to continue? [Y/n]
(Reading database ... 32936 files and directories currently installed.)
Removing aterm ...
```

8.9.8. Installing one Specific Version of a Package

When you install a package with the command

apt-get install <packagename>

the newest version will be automatically installed. Sometimes you don't want to install the newest version, just a little older version.

apt-get install <packagename>=older_versions_number

If you think that the older version of the backup module of Webmin is better, then you should run

apt-cache showpkg webmin-slbackup

to get an overview of available versions

```
tjener:~# apt-cache policy webmin-slbackup
webmin-slbackup:
  Installed: 0.0.10-1
  Candidate: 0.0.10-1
  Version Table:
*** 0.0.10-1 0
      500 http://ftp.skolelinux.no sarge/local Packages
      100 /var/lib/dpkg/status
  0.0.9-1 0
      500 http://ftp.debian.org sarge/main Packages
```

Here you can see that there are two versions available: 0.0.9-1 and 0.0.10-1

If you want to install version 0.0.9-1, you can do that with the command

apt-get install webmin-slbackup=0.0.9-1

```
tjener:~# apt-get install webmin-slbackup=0.0.9-1 --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be DOWNGRADED:
  webmin-slbackup
0 upgraded, 0 newly installed, 1 downgraded, 0 to remove and 0 not upgraded.
Inst webmin-slbackup [0.0.10-1] (0.0.9-1 Debian:3.1r0/stable)
Conf webmin-slbackup (0.0.9-1 Debian:3.1r0/stable)
tjener:~# apt-get install webmin-slbackup=0.0.9-1
Reading Package Lists... Done
Building Dependency Tree... Done
The following packages will be DOWNGRADED:
  webmin-slbackup
0 upgraded, 0 newly installed, 1 downgraded, 0 to remove and 0 not upgraded.
Need to get 22.0kB of archives.
After unpacking 131kB of additional disk space will be used.
Do you want to continue? [Y/n]
```

```
Get:1 http://ftp.debian.org sarge/main webmin-sbackup 0.0.9-1 [22.0kB]
Fetched 22.0kB in 0s (23.6kB/s)
dpkg - warning: downgrading webmin-sbackup from 0.0.10-1 to 0.0.9-1.
(Reading database ... 32924 files and directories currently installed.)
Preparing to replace webmin-sbackup 0.0.10-1 (using ../webmin-sbackup_0.0.9-1_all.deb) .
Unpacking replacement webmin-sbackup ...
Setting up webmin-sbackup (0.0.9-1) ...
```

8.9.9. Installing a Package with the Help of dpkg

Sometimes you want to manually download a package from somewhere, such as from Opera's web page. Then you get a so-called .deb-package in your own home directory. You can install it by using the command

dpkg -i <>

If you first want to do a simulation, run the command

dpkg --no-act -i <packagename>

```
tjener:~# dpkg --install --no-act opera_8.51-20051114.5-shared-qt_en_sarge_i386.deb
Selecting previously deselected package opera.
(Reading database ... 32924 files and directories currently installed.)
Unpacking opera (from opera_8.51-20051114.5-shared-qt_en_sarge_i386.deb) ...
tjener:~# dpkg --install opera_8.51-20051114.5-shared-qt_en_sarge_i386.deb
Selecting previously deselected package opera.
(Reading database ... 32924 files and directories currently installed.)
Unpacking opera (from opera_8.51-20051114.5-shared-qt_en_sarge_i386.deb) ...
dpkg: dependency problems prevent configuration of opera:
 opera depends on libqt3c102-mt; however:
  Package libqt3c102-mt is not installed.
dpkg: error processing opera (--install):
 dependency problems - leaving unconfigured
Errors were encountered while processing:
 opera
```

As you can see, dpkg is not as powerful as apt-get, because it doesn't manage to install all extra packages that is needed. If we now immediately run **apt-get** with some extra options **apt-get --fix-broken** things will improve

```
tjener:~# apt-get install --fix-broken --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
Correcting dependencies... Done
The following extra packages will be installed:
```

```

libaudio2 liblcms1 libmng1 libqt3c102-mt libxcursor1 libxft2
Suggested packages:
  nas liblcms-utils libqt3c102-mt-psql libqt3c102-mt-mysql libqt3c102-mt-odbc
The following NEW packages will be installed:
  libaudio2 liblcms1 libmng1 libqt3c102-mt libxcursor1 libxft2
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.
1 not fully installed or removed.
Inst libaudio2 (1.7-2 Debian:3.1r0/stable) [opera ]
Inst liblcms1 (1.13-1 Debian:3.1r0/stable) [opera ]
Inst libmng1 (1.0.8-1 Debian:3.1r0/stable) [opera ]
Inst libxcursor1 (1.1.3-1 Debian:3.1r0/stable) [opera ]
Inst libxft2 (2.1.7-1 Debian:3.1r0/stable) [opera ]
Inst libqt3c102-mt (3:3.3.4-3 Debian:3.1r0/stable)
Conf libaudio2 (1.7-2 Debian:3.1r0/stable)
Conf liblcms1 (1.13-1 Debian:3.1r0/stable)
Conf libmng1 (1.0.8-1 Debian:3.1r0/stable)
Conf libxcursor1 (1.1.3-1 Debian:3.1r0/stable)
Conf libxft2 (2.1.7-1 Debian:3.1r0/stable)
Conf libqt3c102-mt (3:3.3.4-3 Debian:3.1r0/stable)
Conf opera (8.51-20051114.5 )
tjener:~# apt-get install --fix-broken
Reading Package Lists... Done
Building Dependency Tree... Done
Correcting dependencies... Done
The following extra packages will be installed:
  libaudio2 liblcms1 libmng1 libqt3c102-mt libxcursor1 libxft2
Suggested packages:
  nas liblcms-utils libqt3c102-mt-psql libqt3c102-mt-mysql libqt3c102-mt-odbc
The following NEW packages will be installed:
  libaudio2 liblcms1 libmng1 libqt3c102-mt libxcursor1 libxft2
0 upgraded, 6 newly installed, 0 to remove and 0 not upgraded.
1 not fully installed or removed.
Need to get 3489kB of archives.
After unpacking 8753kB of additional disk space will be used.
Do you want to continue? [Y/n]
Get:1 http://ftp.debian.org sarge/main libaudio2 1.7-2 [71.5kB]
Get:2 http://ftp.debian.org sarge/main liblcms1 1.13-1 [123kB]
Get:3 http://ftp.debian.org sarge/main libmng1 1.0.8-1 [171kB]
Get:4 http://ftp.debian.org sarge/main libxcursor1 1.1.3-1 [23.7kB]
Get:5 http://ftp.debian.org sarge/main libxft2 2.1.7-1 [54.4kB]
Get:6 http://ftp.debian.org sarge/main libqt3c102-mt 3:3.3.4-3 [3045kB]
Fetched 3489kB in 16s (212kB/s)
Selecting previously deselected package libaudio2.
(Reading database ... 33027 files and directories currently installed.)
Unpacking libaudio2 (from .../libaudio2_1.7-2_i386.deb) ...
Selecting previously deselected package liblcms1.
Unpacking liblcms1 (from .../liblcms1_1.13-1_i386.deb) ...
Selecting previously deselected package libmng1.
Unpacking libmng1 (from .../libmng1_1.0.8-1_i386.deb) ...
Selecting previously deselected package libxcursor1.
Unpacking libxcursor1 (from .../libxcursor1_1.1.3-1_i386.deb) ...
Selecting previously deselected package libxft2.
Unpacking libxft2 (from .../libxft2_2.1.7-1_i386.deb) ...

```



```

Selecting previously deselected package libqt3c102-mt.
Unpacking libqt3c102-mt (from .../libqt3c102-mt_3%3a3.3.4-3_i386.deb) ...
Setting up libaudio2 (1.7-2) ...

Setting up liblcms1 (1.13-1) ...

Setting up libmng1 (1.0.8-1) ...

Setting up libxcursor1 (1.1.3-1) ...

Setting up libxft2 (2.1.7-1) ...

Setting up libqt3c102-mt (3.3.4-3) ...

Setting up opera (8.51-20051114.5) ...

```

Armed with the different commands from earlier in this chapter, we can now verify that Opera really is installed

```

tjener:~# apt-cache policy opera
opera:
  Installed: 8.51-20051114.5
  Candidate: 8.51-20051114.5
  Version Table:
  *** 8.51-20051114.5 0
          100 /var/lib/dpkg/status
tjener:~# dpkg --get-selections opera
ii opera                8.51-20051114. The Opera Web Browser

```

8.9.10. Searching Through Files that were Installed by a Specific Package

Sometimes it's nice to know exactly which files came from a specific package. You can get that overview with the command

dpkg --get-selections <packagename>

```

tjener:~# dpkg --get-selections opera
/usr/bin
/usr/bin/opera
.
.
.

```

```
/etc
/etc/opera6rc
/etc/opera6rc.fixed
```

8.9.11. Finding Which Package a File Came From

If you want to know which package a specific package came from, the command

dpkg --search <filename>

will help you find out.

```
tjener:~# dpkg --search /etc/opera6rc.fixed
opera: /etc/opera6rc.fixed
```

8.9.11.1. Unpacking the Files from a Package Without Installing Them

Maybe you have accidentally erased an important systems file, and you do not have any backup of it. What then? If you use the command

dpkg --search <filename>

you will find out which package the file originally comes from. That way you can unpack the package and get back the missing systems file.

First, you have to get the relevant .deb-package. When you have done that, you place it in the /tmp directory. You unpack the files in that directory with the command

dpkg --vextract <packagename> /tmp

which will then create the necessary directories in the /tmp directory and then place the files there.

Warning

Never unpack the package directly in the root-/directory!

8.9.12. Making Your Own Local Mirror for Deb-Packages

There are some packages which I often install, as well as some packages that I wish I didn't have to download from the Internet every time. Even if the command **apt-get** makes it easier to install packages from the Internet, unfortunately **apt-get** won't increase the speed of my Internet connection. However, I

can use **apt-get** to make my own mirror of the packages that I have downloaded. That way, in the future when I want to install these packages, the command **apt-get** will fetch the packages that I have already downloaded. This goes more *quickly*.

```
mkdir /var/www/dpkg
cp /var/cache/apt/archives/*.deb /var/www/dpkg
cd /var/www/
dpkg-scanpackages dpkg /dev/null | gzip -9c > dpkg/Packages.gz
```

After that, a new line in the file `/etc/apt/sources.list` must be added to

```
deb file:///var/www dpkg/
```

Then you must, as usual, run the command **apt-get update** in order to update your package database.

8.9.13. Upgrade of OpenOffice.org from 1.1.3 to 2.0

Skolelinux/Debian-edu is based on the version of Debian with the codename "Stable", that means the software that is included is thoroughly tested, and therefore deemed "Stable", this is all well and nice because that means your server will not crash, but it might mean that your users will crash your workday by demanding newer and up-to-date software, then you must upgrade ..

Luckily you are not the only one with such demands coming from your users, and for this reason there has been put in place a framework where it is possible to install newer software on Debian Stable, which wasn't meant for it. Welcome "backports", <http://www.backports.org/>. Backports is a software repository holding such things as OpenOffice.org 2.0.

Tip: Before you install OpenOffice.org 2.0, it's wise to remove OpenOffice.org 1.1.3, like this:

```
apt-get remove openoffice.org openoffice.org-bin openoffice.org-debian-files
```

That will most likely remove most of the installed OpenOffice.org packages, to be sure use

```
COLUMNS=160 dpkg -l | grep openoffice
```

to see which is left, then remove those as well.

If you want to install anything from backports, the quickest way is to add this extra line to the file `/etc/apt/sources.list`

```
deb http://www.backports.org/debian/ sarge-backports main
```

Then do the usual

```
apt-get update
```

Then install OpenOffice.org 2.0 and some extra packages with the command

```
apt-get install openoffice.org openoffice.org-kde openoffice.org-l10n-nb openoffice.org-l10n-nn
openoffice.org-l10n-de openoffice.org-l10n-fr --simulate
```

this will install just about all you need (and possibly some more)

Warning

Especially when it comes to installing software from "unofficial" repositories, like Backports, I *strongly* suggest running **apt-get install** with the **--simulate** switch the first time, just to see what actually will happen, *before* it happens, and when you are comfortable with what you see when using **--simulate**, or when you decide that you will try anyway, then just remove **--simulate**

Running with **--simulate** should yield something like this:

```
tjener:~#apt-get install openoffice.org openoffice.org-kde openoffice.org-l10n-nb openoffice.org-l10n-nn
openoffice.org-l10n-de openoffice.org-l10n-fr --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
The following extra packages will be installed:
  libgnujaxp-java libgnujaxp-jni libneon24 libnspr4 libnss3 libsndfile1 libwpd8 libxt-java openoffice
  openoffice.org-core openoffice.org-draw openoffice.org-impress openoffice.org-java-common openoffice
  openoffice.org-l10n-en-us openoffice.org-l10n-es openoffice.org-l10n-nl openoffice.org-math openoffi
Suggested packages:
  libservlet2.2-java libservlet2.3-java openoffice.org-help oqstart-gnome oooqs-kde unixodbc ttf-deja
  openoffice.org2-thesaurus msttcorefonts openoffice.org-gnome mozilla-browser openoffice.org-officeb
  openoffice.org-filter-so52 openclipart-openoffice.org openoffice.org-thesaurus openoffice.org-mimel
  odbc-postgresql tdsodbc mdbtools libmysql-java libpg-java libsapdbc-java kaddressbook openoffice.org
  openoffice.org-help-ca-2.0.1 openoffice.org-thesaurus-ca openoffice.org-help-ca openoffice.org-hyph
  openoffice.org-help-de-2.0.1 openoffice.org-thesaurus-de openoffice.org-help-de openoffice.org-hyph
  openoffice.org-help-el-2.0.1 openoffice.org-thesaurus-el myspell-dictionary-en-us openoffice.org-hy
  openoffice.org-help-en-us-2.0.1 openoffice.org-hyphenation-es openoffice.org2-thesaurus-es openoffi
  openoffice.org-hyphenation-fr openoffice.org2-thesaurus-fr openoffice.org-help-fr-2.0.1 openoffice.
  openoffice.org2-thesaurus-nb openoffice.org-help-nb-2.0.1 openoffice.org-thesaurus-nb openoffice.org
  openoffice.org-hyphenation-nl openoffice.org2-thesaurus-nl openoffice.org-help-nl-2.0.1 openoffice.
  openoffice.org-hyphenation-nn openoffice.org2-thesaurus-nn openoffice.org-help-nn-2.0.1 openoffice.
The following packages will be REMOVED:
  openoffice.org-help-el openoffice.org-help-en openoffice.org-help-es openoffice.org-help-fr openoffi
The following NEW packages will be installed:
  libgnujaxp-java libgnujaxp-jni libneon24 libnspr4 libnss3 libsndfile1 libwpd8 libxt-java openoffice
  openoffice.org-common openoffice.org-core openoffice.org-draw openoffice.org-impress openoffice.org
  openoffice.org-l10n-en-us openoffice.org-math openoffice.org-writer python-uno
The following packages will be upgraded:
  openoffice.org-l10n-ca openoffice.org-l10n-de openoffice.org-l10n-el openoffice.org-l10n-es openoffi
  openoffice.org-l10n-nl openoffice.org-l10n-nn
8 upgraded, 21 newly installed, 5 to remove and 258 not upgraded.
```

Warning

Pay closely attention to what will be *Removed*.

If what you see looks like what I see, then you can remove **--simulate** and install OpenOffice.org.

Warning

Once you are done with installing OpenOffice.org 2.0 you *should/must* remove the line in `/etc/apt/sources.list` that referees to backports, if you forget that, and run **apt-get upgrade** with those lines included, the consequence can be dire ...

8.9.14. Upgrade OpenClipart

One very good companion to OpenOffice.org is openclipart, I recommend using the one from Debian Testing

8.10. The Quota System for Hard Drive Space

First we need some additional packages, install them with **apt-get install quota quotatool**

```
tjener:~# apt-get install quota quotatool --simulate
tjener:~# apt-get install quota quotatool
```

Then we must umount the partition we want to apply quota on

```
tjener:~# umount /skole/tjener/home0/
```

Note: If you are using a 2.4-kernel, and not a 2.6-kernel, see booting with 2.6, you must manually insert the necessary module

modprobe quota_v2

```
tjener:~# modprobe quota_v2
Warning: loading /lib/modules/2.4.27-2-386/kernel/fs/quota_v2.o will taint the kernel: no license
See http://www.tux.org/lkml/#export-tainted for information about tainted modules
Module quota_v2 loaded, with warnings
```

You should add it to the file `/etc/modules`, so that it gets loaded automatically at boot,

```
echo "quota_v2" >> /etc/modules
```

You might have to stopping nfs first, see resizing home0

You could probably also just run

```
mount -o remount,usrquota,grpquota /skole/tjener/home0/
```

Then we must mark that partition in `/etc/fstab` as having quotas, modify the home0-line so it looks like:

```
/dev/vg_data/lv_home0    /skole/tjener/home0    ext3    defaults,usrquota,grpquota    0 2
```

Then we may mount `/skole/tjener/home0`

```
tjener:~# mount /skole/tjener/home0/
```

Then we create the quota database files, and give the appropriate permissions

```
tjener:~# touch /skole/tjener/home0/aquota.user
tjener:~# touch /skole/tjener/home0/aquota.group
tjener:~# chmod 600 /skole/tjener/home0/aquota.user
tjener:~# chmod 600 /skole/tjener/home0/aquota.group
```

See that they have zero-size

```
tjener:~# ls -lh /skole/tjener/home0/aquota*
-rw----- 1 root root 0 2005-12-09 15:54 /skole/tjener/home0/aquota.group
-rw----- 1 root root 0 2005-12-09 15:54 /skole/tjener/home0/aquota.user
```

Now we populate the database files, and notice afterward that they no longer are of zerosize

```
tjener:~# quotacheck -avug
quotacheck: WARNING - Quotafile /skole/tjener/home0/aquota.user was probably truncated. Can
quotacheck: WARNING - Quotafile /skole/tjener/home0/aquota.group was probably truncated. Ca
quotacheck: Scanning /dev/mapper/vg_data-lv_home0 [/skole/tjener/home0] done
quotacheck: Checked 3 directories and 3 files
tjener:~# ls -lh /skole/tjener/home0/aquota*
-rw----- 1 root root 32 2005-12-09 15:54 /skole/tjener/home0/aquota.group
-rw----- 1 root root 32 2005-12-09 15:54 /skole/tjener/home0/aquota.user
```

Note: Note that if you have lots of data on `/skole/tjener/home0`, the scanning process might take a long time.

Then we activate quotas

```
tjener:~# quotaon -a
```

We still haven't given any users any quotas, but we may see what they are using

```
tjener:~#repquota /skole/tjener/home0
*** Report for user quotas on device /dev/mapper/vg_data-lv_home0
Block grace time: 7days; Inode grace time: 7days
```

User	Block limits				File limits			
	used	soft	hard	grace	used	soft	hard	grace
ronja	-- 7764	0	0		569	0	0	
henrik	-- 8328	0	0		569	0	0	
anna	-- 13232	0	0		684	0	0	
agnes	-- 7860	0	0		563	0	0	
kristof	-- 7856	0	0		606	0	0	
matthias	-- 11044	0	0		668	0	0	
sven	-- 14848	0	0		650	0	0	
gustav	-- 8360	0	0		608	0	0	
eli	-- 10412	0	0		678	0	0	
anna	-- 7972	0	0		565	0	0	
linemar	-- 7804	0	0		564	0	0	
marcus	-- 15344	0	0		719	0	0	
karl	-- 7244	0	0		570	0	0	
regine	-- 9700	0	0		700	0	0	

Now we are ready to put some quotas on our users. First we setup quotas for one user, then we use those settings for all our other users.

Lets setup for the user **klaus**, like this:

```
EDITOR=nano edquota -u klaus
```

This will use the well-known editor nano for setting up the quota.

```
Disk quotas for user klaus (uid 10011):
Filesystem          blocks      soft      hard      inodes      soft      hard
/dev/mapper/vg_data-lv_home0    5252      6252      7252          275          0          0
```

```
[ Read 3 lines ]
^G Get Help      ^O WriteOut      ^R Read File      ^Y Prev Page      ^K Cut Text      ^C Cur Pos
^X Exit          ^J Justify        ^W Where Is       ^V Next Page      ^U UnCut Txt     ^T To Spell
```

Once you are done setting up quotas for one user, in this case the user **klaus**, you use the command

edquota -p klaus someone

This will give the user with the username **someone** the same quota as the user **klaus**.

There is also a Webmin module available for quotas.

apt-get install webmin-quota

The new Webmin quota-module is available in the "System"-section of Webmin, same place as the ldap-user-module. The url is Webmin Disk Quotas (<https://tjener.intern:10000/quota>)

Figure 8-12. Webmin disk quota icon

webmin quota icon

This is the Webmin disk quota icon, found under **Systems**

Figure 8-13. Filesystems with quotas

filesystems with quota

Figure 8-14. quotas for home0

quotas for home0

Figure 8-15. Edit quota for user klaus

Edit quota for user klaus

8.10.1. Stopping the File .xsession-error From Filling up Your Entire Hard Drive

Sometimes a program can get very troublesome and start writing enormous amount of error messages to the file `.xsession-errors` in a user's home directory. Some programs, especially GIMP, are fully

capable in the space of only a few minutes of creating such a large `.xsession-errors` file that the whole hard drive gets full. So, everything stops working. Then the root user has to go in to the main server and find that file and delete it. This is not exactly what you want to do on a regular schoolday.

So, even if such error message files as `.xsession-errors` are surely useful to have when you need to diagnose a problem, they are really more of a hassle in the schoolday. So, you need to get rid of it. You can do this by redirecting all messages that would otherwise be written to this file, right into the waste bin `/dev/null`

By changing a few lines in the file `/etc/X11/Xsession` set a comment symbol(`#`) in front of these lines, in this way:

```
#ERRFILE=$HOME/.xsession-errors&&
#
## attempt to create an error file; abort if we cannot
#if touch "$ERRFILE" 2> /dev/null && [ -w "$ERRFILE" ] &&
# [ ! -L "$ERRFILE" ]; then
#   chmod 600 "$ERRFILE"
#elif ERRFILE=$(tempfile 2> /dev/null); then
#   if ! ln -sf "$ERRFILE" "${TMPDIR:=/tmp}/xsession-$USER"; then
#       message "warning: unable to symlink \"$TMPDIR/xsession-$USER\" to" \
#               "\"$ERRFILE\"; look for session log/errors in" \
#               "\"$TMPDIR/xsession-$USER\"."
#   fi
#else
#   errormsg "unable to create X session log/error file; aborting."
#fi
#
#exec >>"$ERRFILE" 2>&1
```

And set in these two lines instead:

```
errfile="/dev/null"
exec > "$errfile" 2>&1
```

Now you don't need to be afraid that `.xsession-errors` will fill up your entire hard drive.

Notes

1. The thin clients must have their MAC address locked to an IP address in `/etc/dhcp3/dhcpd.conf` in order to get a swapfile.
2. The size of these swapfiles, and whether they are enabled or not, is defined in `/opt/lts/i386/etc/lts.conf`. Look for the lines

```
SWAPFILE_SIZE=32m
USE_NFS_SWAP = Y
```

3. Unless you also make the corresponding changes to bind and DNS

Chapter 9. Services Out-of-the-Box in Skolelinux/Debian-edu

9.1. Thinclient server

9.1.1. Adding a Printer to a Thin Client

Warning

Before you try to add a printer in Skolelinux/Debian-edu, you should really think about this *before* you get a printer. So check out the web pages on [linuxprinting.org](http://www.linuxprinting.org) (<http://www.linuxprinting.org>) to find out if your printer is supported out-of-the-box by Linux. If you have a printer that is classified as a "paperweight", then get rid of it, or use it as a door stopper.

Recipe for Setting up a Printer on a Thin Client

- Plug the printer into the thin client. This example is for a printer on a parallel port, so we use `/dev/lp0`
- Add the MAC address of this thin client in Webmin, for example ltsp050, have a look at [for howto](#) lock a mac-address to a specific ip-address/hostname
- Use a text editor to open the file `/opt/ltsp/i386/etc/lts/lts.conf`, and add these lines

```
[ltsp050]
PRINTER_0_DEVICE =/dev/lp0
PRINTER_0_TYPE   =P
```

If this thin client needs other configuration lines, add them here as well; maybe its video card does not allow autodetection, etc.

- Go to K-menu->Control Center->System->Printing Manager and click on "the magic wand" icon to add a printer. Click on 'Next'. Then for backend selection choose 'Network printer(TCP)'. Click on 'Next'.
- Click on 'Settings'. Instead of 10.2.0, type 192.168.0, if the printer is connected to a thin client, leave the other values as they are. Click OK. Click on the button 'Scan', and it will then search for your printer, which will take about 30-60 seconds. In the large frame on the left, you will soon see information about the thin client that has an attached printer, choose that one, and the rest of the process of choosing printer and driver should be pretty easy, I hope. :-)
- When you try to print out a "test page", you may find that the printer reacts, but still nothing gets printed out. The printer's resolution may be set too high. Try it again with 150 ppt.

9.2. Ldap server

9.3. SSH server

9.4. rdiff backup server

There is a backup module included in Webmin. You find it under the tab "Servers" and "Skolelinux Backup", or <https://tjener.intern:10000/slbackup>

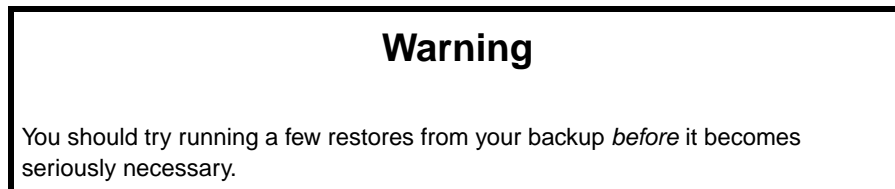


Figure 9-1. Webmin Servers

Webmin slbackup icon

This is the place in Webmin where you find slbackup.

Figure 9-2. Slbackup, General

slbackup, general

Slbackup has 5 modes of operation;

- General, Figure 9-2
- Backup details, Figure 9-3
- Restore, Figure 9-6
- Maintenance, Figure 9-8

- SSH keys, Figure 9-9

Figure 9-3. Slbackup, Backup Details

slbackup, details

This is where you set the time that you want the backup to be done, which will then take place at that time every day.

Slbackup Expert Tips

If you want, you can set slbackup so that it does a backup more often than once a day. This is done by changing the file `/etc/cron.d/slbackup`, read about further options in the manual page of cron, **man cron** .

Figure 9-4. Slbackup, Backup Details, Backup Clients

slbackup details client

Here you configure which machine you want to backup. You specify the IP address, or use the hostname, together with the directories that you want to backup, and how long you want to keep a copy of the backup.

Figure 9-5. Slbackup, Backup Details, Backup Server

slbackup, details server

Here you set up the details for the machine that is going to do the backup. The most important detail is where the backup is going to be stored. The default backup partition is the LVM partition `/skole/backup`, see section Section 8.5.3. But there is nothing to stop you from setting in an extra hard drive and storing your backup there instead.

If you are observant, you may have noticed that we place the backup on the same hard drive as the one we *take* backup of. Stupid? Not so, if we take backups as an extra service for our users in case they accidentally delete a file. It is, of course, stupid to store your backup on the same hard drive if the purpose is to guard against a drive getting broken. Then it is wiser to set up a machine with a workstation profile, see Section 2.5, and install some really large capacity hard drives and use `slbackup` to make the backup external..

Figure 9-6. Slbackup, Restore

`slbackup, restore`

What good is it to have a backup utility, if you can't put the files back that have been deleted? By choosing "Restore" you have the possibility to choose which machine you want to get the files from, as well as which file or entire directory you want to get. You can also use everything that you have taken a backup of on the machine in question.

Figure 9-7. Slbackup, Restored Files

`slbackup, restore`

When you have chosen which machine you want to get the backup from, then you will get to make several more choices, among which the date/time you want to restore the backup and where you want the files to be placed. To start with, it's wise to use the directory `/tmp/<machinename>`.

It's smart to place the files being restored in the directory `/tmp/<machinename>`. Everything that is stored in this directory gets deleted when the machine reboots. In addition, by placing the files there, in this temporary directory, you make sure that you don't accidentally write over the wrong files (when you replace an old file with a new one that has the same name). After you have taken out the files that you need to restore, then you must go into this directory, `/tmp/<machinename>`, and use a file manager, see Section 12.1, to get out the files that you want.

Figure 9-8. Slbackup, Maintenance

`slbackup, maintenance`

By choosing "maintenance" you get the possibility to delete old backups that you no longer have any use for, or place for.

Figure 9-9. Slbackup, SSH Keys

slbackup, ssh keys

In order to be able to take a backup over the network from other machines, without being asked each time for a password, SSH has been set up in such a way so that you only type in the password once. See `ssh` for more about `ssh`.

9.4.1. Comparison of Various Versions of the Same File

If you have "destroyed" the format of a file, for example `/etc/fstab` but you know that you have a backup of that file which is good, then you can use one of several programs to compare the various versions of that file. If you have chosen to **restore**, then the old version of the file `/etc/fstab` will be placed in the directory `/tmp/<machinename>/etc/fstab`. A command-line based program is included to do a comparison of the files. The program is called `diff`, and is used in this fashion

```
diff /etc/fstab /tmp/<machinename>/etc/fstab
```

In this example, I have two examples of the file `fstab`, There is an error in one of them- it has two spellingmistakes.. This is the result of running the command **diff** with these two files:

```
tjener:~# diff /etc/fstab /tmp/tjener/etc/fstab
7,8c7,8
< /dev/vg_data/lv_home /skole/tjener/home0 ext3 defaults 0 2
< /dev/vg_data/lv_backup /skole/backup ext3 defaults 0 2
---
> /dev/vg_data/lv_home0 /skole/tjener/home0 ext3 defaults 0 2
> /dev/vg_data/lv_backup /skole/backup ext3 defaults 0 2
```

Fortunately there are other programs that do the same job. One of them `kompare` can be installed with

```
apt-get install kompare
```

see Section 8.9 for how to add new packages. `kompare` has a graphical interface (GUI). If I start `kompare` and open the two files in this program, this is what I see:

Figure 9-10. Kompare, gui based diff

FIXME 62: description of image

9.4.2. Dedicated machine to hold the backups

By setting up a machine with a "workstation", profile Section 2.5, and installing the necessary rdiff-applications, you can quickly set up a very user-friendly and powerful backup machine.

apt-get install rdiff-backup

```
ltspserver05:~# apt-get install rdiff-backup --simulate
Reading Package Lists... Done
Building Dependency Tree... Done
The following extra packages will be installed:
  librsync1 rdiff
The following NEW packages will be installed:
  librsync1 rdiff rdiff-backup
0 upgraded, 3 newly installed, 0 to remove and 119 not upgraded.
Inst librsync1 (0.9.7-1 Debian:3.1r0/stable)
Inst rdiff (0.9.7-1 Debian:3.1r0/stable)
Inst rdiff-backup (0.13.4-5 Debian:3.1r0/stable)
Conf librsync1 (0.9.7-1 Debian:3.1r0/stable)
Conf rdiff (0.9.7-1 Debian:3.1r0/stable)
Conf rdiff-backup (0.13.4-5 Debian:3.1r0/stable)
ltspserver05:~# apt-get install rdiff-backup
Reading Package Lists... Done
Building Dependency Tree... Done
The following extra packages will be installed:
  librsync1 rdiff
The following NEW packages will be installed:
  librsync1 rdiff rdiff-backup
0 upgraded, 3 newly installed, 0 to remove and 119 not upgraded.
Need to get 0B/197kB of archives.
After unpacking 770kB of additional disk space will be used.
Do you want to continue? [Y/n]
Selecting previously deselected package librsync1.
(Reading database ... 69270 files and directories currently installed.)
Unpacking librsync1 (from .../librsync1_0.9.7-1_i386.deb) ...
Selecting previously deselected package rdiff.
Unpacking rdiff (from .../rdiff_0.9.7-1_i386.deb) ...
Selecting previously deselected package rdiff-backup.
Unpacking rdiff-backup (from .../rdiff-backup_0.13.4-5_i386.deb) ...
Setting up librsync1 (0.9.7-1) ...
Setting up rdiff (0.9.7-1) ...
Setting up rdiff-backup (0.13.4-5) ...
```


When combined with making a backup volume, see Section 8.5.8, this is a fine way to do backups of files all the time.

To add a dedicated backupvolume, run this command

```
lvcreate --size 1G --name lv_backup vg_system
mkdir /backup
mke2fs -j /dev/vg_system/lv_backup
```

Don't forget to add a corresponding entry in `/etc/fstab` in this case it would be

```
/dev/vg_system/lv_backup /backup ext3 defaults 0 2
```

Warning

You *must* make sure that this machine has a locked ip-address, have a look at `dhcp-server`

Also make sure that you under the tab **Backup details** specify that the backup-server is **external** and remember to use the correct ip-address in the field **Hostname or IP-address:**, you could also stick with using the hostname **backup**, provided that you have made the correct changes to the DNS server, see DNS

9.4.3. Sbackup from the Command Line

There are commands that can be run from the command line, so you don't need to start a webbrowser and Webmin.

The command to list times backup is available from

```
rdiff-backup --list-increments tjener::skole/backup/tjener
```

If you have the backups placed on a external machine, like described in then substitute "tjener" with the hostname or ip-address of that machine, and the path to where you have placed the backups, it might look like this:

```
rdiff-backup --list-increments 10.0.2.50::/backup/tjener
```

Note: If you are logged in on the machine that holds the backup, you don't need to specify any hostname/ip-address, if you are logged in on the fileserver, you could just use

rdiff-backup --list-increments /skole/backup/tjener

```
tjener:~# rdiff-backup --list-increments tjener:./skole/backup/tjener/
Password:
-----
Detected abilities for archive (read/write) file system:
  Characters needing quoting          "
  Ownership changing                  On
  Hard linking                         On
  fsync() directories                 On
  Directory inc permissions            On
  Access control lists                 Off
  Extended attributes                 Off
  Mac OS X style resource forks        Off
  Mac OS X Finder information          Off
-----
Found 13 increments:
  increments.2005-09-24T22:45:23+02:00.dir  Sat Sep 24 21:45:23 2005
  increments.2005-09-25T22:45:22+02:00.dir  Sun Sep 25 21:45:22 2005
  increments.2005-09-26T22:48:25+02:00.dir  Mon Sep 26 21:48:25 2005
  increments.2005-09-27T22:45:23+02:00.dir  Tue Sep 27 21:45:23 2005
  increments.2005-09-28T22:48:23+02:00.dir  Wed Sep 28 21:48:23 2005
  increments.2005-09-29T23:15:18+02:00.dir  Thu Sep 29 22:15:18 2005
  increments.2005-09-30T23:14:56+02:00.dir  Fri Sep 30 22:14:56 2005
  increments.2005-10-01T23:14:07+02:00.dir  Sat Oct  1 22:14:07 2005
  increments.2005-10-02T23:13:02+02:00.dir  Sun Oct  2 22:13:02 2005
  increments.2005-10-03T23:14:12+02:00.dir  Mon Oct  3 22:14:12 2005
  increments.2005-10-04T23:14:58+02:00.dir  Tue Oct  4 22:14:58 2005
  increments.2005-10-06T00:00:44+02:00.dir  Wed Oct  5 23:00:44 2005
  increments.2005-10-06T23:56:50+02:00.dir  Thu Oct  6 22:56:50 2005
Current mirror: Fri Oct  7 22:59:53 2005
```

If you now want to restore some files, say from the date 2005-10-04T23:14:58 the files in /etc/network/interfaces and place them in /tmp/intefaces you could use

rdiff-backup --restore-as-of 2005-10-04T23:14:58
tjener:./skole/backup/tjener/etc/network/interfaces /tmp/interfaces

If you rather have the newest available file from the backup, you use the keyword "now" for date, like this

rdiff-backup --restore-as-of now tjener:./skole/backup/tjener/etc/network/interfaces
/tmp/interfaces

9.4.4. Slbackup Log Files

You find the log files for slbackup in `/var/log/slbackup/slbackup.log`. This is where information is logged about when the last backup was done, how much was changed, etc

```
-----[ Session statistics ]-----
StartTime 1086202803.00 (Wed Jun  2 21:00:03 2004)
EndTime 1086204514.88 (Wed Jun  2 21:28:34 2004)
ElapsedTime 1711.88 (28 minutes 31.88 seconds)
SourceFiles 56607
SourceFileSize 1625082476 (1.51 GB)
MirrorFiles 41244
MirrorFileSize 1060012665 (1011 MB)
NewFiles 15372
NewFileSize 564463215 (538 MB)
DeletedFiles 9
DeletedFileSize 65488 (64.0 KB)
ChangedFiles 344
ChangedSourceSize 667575185 (637 MB)
ChangedMirrorSize 666903101 (636 MB)
IncrementFiles 15725
IncrementFileSize 1936873 (1.85 MB)
TotalDestinationSizeChange 567006684 (541 MB)
Errors 0
-----

Jun 02 21:28:36 - Successfully finished backing up client tjener
Jun 02 21:28:36 - Finished slbackup.
```

It pays once in a while to have a look at this file, check that you have "Successfully finished backing up"

9.4.5. Use of slbackup in real-life

Go to Restore and choose "full restore", make sure you have enough space in the directory where you place the files temporarily. If there is something wrong with your backup, you'll find out now.

9.5. Samba server, windows file and print

In order to be able to add windows machines to the Skolelinux/Debian-edu domain, you need a samba-root password, you generate that with command

smbpasswd root

9.6. Munin systemstatistics server

Note: It might take 5-10 minutes before changes to the Munin configuration files are taken into effect.

If you point your browser to the url `http://tjener.intern/munin` you will see that Munin is already running on your , albeit not yet properly configured. You should see something like this:

Figure 9-11. Unconfigured Munin

Munin as in out-of-the-box

I use the following convention, "Server" is the machine that gathers and displays the statistics, in a Skolelinux/Debian-edu network that is usually the Mainserver, "clients" are the machines that we want to monitor. There are two things we need to configure, setting up the clients so that the Mainserver can be allowed to gather the data, and telling the Mainserver which clients it should monitor. We should also make Munin use a more appropriate name than localhost, replace the following stanza in the file `/etc/munin/munin.conf`

```
[localhost.localdomain]
    address 127.0.0.1
    use_node_name yes
```

with something like

```
[tjener.intern]
    address 127.0.0.1
    use_node_name yes
```

Now that we have meaningful names, let's tell Munin which clients it should monitor. If you have a Thin Client server, with the "correct" ip-address of 10.0.2.10, then adding the following stanza to the file `/etc/munin/munin.conf` on the Mainserver will make Munin start monitoring that client:

```
[ltspserver00.intern]
    address 10.0.2.10
    use_node_name yes
```

Now we need to tell the client that the server is allowed to gather statistics, we do this by adding an extra line at the end of the file `/etc/munin/munin-node.conf` on the client:

```
allow ^10\.0\.2\.2$
```

Note: When you have made changes to the file `/etc/munin/munin-node.conf` on the client, you must restart Munin with the command

`/etc/init.d/munin-node restart`

After a few minutes you should see something like this:

Figure 9-12. Munin with Mainserver and Thin Client server

Munin with two clients

9.6.1. SNMP Munin plugin

Some devices are SNMP capable, and there is no need for munin-node to be installed on such a device. SNMP capable devices include printers, embedded firewalls, routers and wireless accesspoints.

I personally use the FreeBSD based m0n0wallfirewall/router as my Skolelinux/Debian-edu router, to get Munin to monitor it, I first enable SNMP on the firewall, with the community string set to *public*. Then you need to add a line to the file `/etc/munin/munin-node.conf` on the server

```
allow ^10\.0\.2\.2
```

And also these two lines to the file `/etc/munin/munin.conf`

```
[gateway.intern]
    address 10.0.2.2
```

Note: Note that eventhough the address of the device you want to monitor in this case is *10.0.2.1*, you still must use the address of the server here, in this case *10.0.2.2*

Now you must setup the Munin SNMP-plugins, you do this easiest with the included command

munin-node-configure-snmp gateway

In my case when run against my firewall, I get this in return:

```
tjener:~# munin-node-configure-snmp gateway
ln -s /usr/share/munin/plugins/snmp__if_err_ /etc/munin/plugins/snmp_gateway_if_err_1
ln -s /usr/share/munin/plugins/snmp__if_err_ /etc/munin/plugins/snmp_gateway_if_err_2
ln -s /usr/share/munin/plugins/snmp__if_ /etc/munin/plugins/snmp_gateway_if_1
ln -s /usr/share/munin/plugins/snmp__if_ /etc/munin/plugins/snmp_gateway_if_2
```

You are now supposed to copy and paste these four lines above, but make sure than you modify it a little bit, so that it includes the domain *intern*, like this:

```
tjener:~# ln -s /usr/share/munin/plugins/snmp__if_err_ /etc/munin/plugins/snmp_gateway.intern
tjener:~# ln -s /usr/share/munin/plugins/snmp__if_err_ /etc/munin/plugins/snmp_gateway.intern
```

```
tjener:~# ln -s /usr/share/munin/plugins/snmp_if_ /etc/munin/plugins/snmp_gateway.intern_i
tjener:~# ln -s /usr/share/munin/plugins/snmp_if_ /etc/munin/plugins/snmp_gateway.intern_i
```

After you have made changes to the file `/etc/munin/munin-node.conf` you must restart munin-node with

`/etc/init.d/munin-node restart`

After a few minutes, sometimes it takes as much as 10 minutes before anything happens, you should see something like this at <http://tjener.intern/munin/intern/gateway.intern.html>

Figure 9-13. Munin SNMP firewall

Munin with SNMP firewall

If you would like to test the SNMP capabilities of any of your devices, try running

`snmpwalk -v 1 -c public 10.0.2.30`

You might be rewarded with something rather meaningless like this, which is a good sign:

```
tjener:~# snmpwalk -v 1 -c public 10.0.2.30
SNMPv2-MIB::sysDescr.0 = STRING: HP ETHERNET MULTI-ENVIRONMENT,ROM G.08.21,JETDIRECT,JD33,E
SNMPv2-MIB::sysObjectID.0 = OID: SNMPv2-SMI::enterprises.11.2.3.9.1
SNMPv2-MIB::sysUpTime.0 = Timeticks: (9102780) 1 day, 1:17:07.80
SNMPv2-MIB::sysContact.0 = STRING:
```

Note: If you when running **`munin-node-configure-snmp`** see something like this:

```
Can't locate Net/SNMP.pm in @INC (@INC contains: /etc/perl /usr/local/lib/perl/5.8.4 /usr/local/s
/usr/lib/perl5 /usr/share/perl5 /usr/lib/perl/5.8 /usr/share/perl/5.8 /usr/local/lib/site_perl .)
at /usr/sbin/munin-node-configure-snmp line 29.
BEGIN failed--compilation aborted at /usr/sbin/munin-node-configure-snmp line 29.
```

then you are quit possibly missing some necessary perl stuff, I'm sure **`apt-get install libnet-snmp-perl`** will fix this.

Tip: It's also possible to use Munin together with SNMP to monitor Windows-machines.

9.7. DHCP server

Warning

After you have made any changes to `/etc/dhcp3/dhcpd.conf`, either by editing the file directly, or via Webmin, you need to restart the DHCP3-server for the changes to take affect. This is either done from the command line with

`/etc/init.d/dhcp3-server restart`

or in Webmin by pressing the button labeled 'Apply Changes'.

All servers in Skolelinux/Debian-edu, mainserver and thinclientserver, run DHCP-servers. This means that any machine, workstation, thinclient and other machines (laptops, Windows, Mac machines) will get a dynamic IP address, that is, the IP address given to the individual machine is likely to be different every time that machine connects.

In order to make your life easier, you should make these machines have a static IP address. Add their MAC addresses to the right group in the DHCP-setup.

Note: To reduce complexity the dhcp-configuration file `/etc/dhcp3/dhcpd.conf` is identical on both profiles that has a dhcp-server running, Main-server and Thinclient-server, and also therefor also on the Combi-server. Therefor make sure that you use the correct url for webmin when editing the different stanzas in `/etc/dhcp3/dhcpd.conf`.

9.7.1. Thin Clients

```
host ltsp010 {
    hardware ethernet    00:00:00:00:00:00;
    fixed-address         ltsp010;
    #filename              "/tftpboot/lts/vmlinuz-2.4.26-ltsp-2";
    filename              "/tftpboot/lts/pxelinux.0";
    #option option-128     e4:45:74:68:00:00;
    #option option-129     "NIC=3c509";
}
```

There are already 100 places set aside for 100 thin clients in the file `/etc/dhcp3/dhcpd.conf`

Note: Thinclients must be attached to the networkcard with the name `eth1`

It is defined in the configuration of bind and that the name `ltsp010` translates to the ip-address 192.168.0.10, and same with the name `ltsp011` translating to 192.168.0.11.

If you want to edit any of the mac/ip-address for thinclients, then you must use the url <https://ip-of-thinclientserver:10000> if you have a dedicated Thinclient server, or use <https://tjener.intern:10000> if you have a Combi-server

9.7.2. Workstation (Linux, Windows, Mac)

```
host static00 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address static00;
}
host static01 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address static01;
}
host static02 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address static02;
}
host static03 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address static03;
}
```

There is 4 places set aside for machines with a static IP address in the file `/etc/dhcp3/dhcpd.conf`. If you need more, then make more by using the ones provided there as a template.

The next one you make yourself will then look like this:

```
host static04 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address static04;
}
```

Note: Workstation *should* be attached to the networkcard with the name `eth0` if you have a combi-server, or to the same switch as other servers.

It is defined in the configuration of bind and that the name `static00` translates to the ip-address 10.0.2.50, and same with the name `static01` translating to 10.0.2.51

If you want to edit any of the mac/ip-address for workstations, then you must use the url
<https://tjener.intern:10000>

9.7.3. Printers

```
host printer00 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address printer00;
}

host printer01 {
    hardware ethernet 00:00:00:00:00:00;
    fixed-address printer01;
}
```

Note: Printers *should* be attached to the networkcard with the name *eth0* if you have a combi-server, or to the same switch as other servers.

It is defined in the configuration of bind and that the name printer00 translates to the ip-address 10.0.2.30, and same with the name printer01 translating to 10.0.2.31.

If you want to edit any of the mac/ip-address for printers, then you must use the url
<https://tjener.intern:10000>

Note: Obviously, if you *must* place your printer in a thinclient network, e.g ip-range 192.168.0.0/24, then you must add it's mac-address under the stanza belonging to the thinclients.

9.7.4. Thin Client Servers

```
group {
    host ltspserver00 {
        hardware ethernet 00:00:00:00:00:00;
        fixed-address ltspserver00;
    }
}
```

If you want to edit any of the mac/ip-address for thinclientserver, then you must use the url
<https://tjener.intern:10000>

9.7.5. Changing the ip-range used by thinclients on networkcard eth1

Note: In this example the machine is a Combi-server, one with both the profiler Main-server and Thinclient-server installed, if you do this in a network with the profile installed in different machines, then you might have to edit some additional files, maybe not, I just haven't tested that.

Sometimes, you need, due to the rest of your network, to change the ip-range that is used for the thinclients. The default ip-range is 192.168.0.0/24, which according to ipcalc gives this:

```
tjener:~# apt-get install ipcalc
```

```
tjener:~# ipcalc 192.168.0.0/24
```

```
Address:   192.168.0.0      11000000.10101000.00000000. 00000000
Netmask:   255.255.255.0 = 24 11111111.11111111.11111111. 00000000
Wildcard:  0.0.0.255       00000000.00000000.00000000. 11111111
=>
Network:   192.168.0.0/24   11000000.10101000.00000000. 00000000
HostMin:   192.168.0.1     11000000.10101000.00000000. 00000001
HostMax:   192.168.0.254   11000000.10101000.00000000. 11111110
Broadcast: 192.168.0.255   11000000.10101000.00000000. 11111111
Hosts/Net: 254             Class C, Private Internet
```

So you see, 192.168.0.1 upto 192.168.0.254

Lets assume you prefer to use 172.16.0.0/24 instead.

```
tjener:~# ipcalc 172.16.0.0/24
```

```
Address:   172.16.0.0      10101100.00010000.00000000. 00000000
Netmask:   255.255.255.0 = 24 11111111.11111111.11111111. 00000000
Wildcard:  0.0.0.255       00000000.00000000.00000000. 11111111
=>
Network:   172.16.0.0/24   10101100.00010000.00000000. 00000000
HostMin:   172.16.0.1     10101100.00010000.00000000. 00000001
HostMax:   172.16.0.254   10101100.00010000.00000000. 11111110
Broadcast: 172.16.0.255   10101100.00010000.00000000. 11111111
Hosts/Net: 254             Class B, Private Internet
```

Achieving this goal is a simple matter of replacing all instances of 192.168 with 172.16 in the following files:

- /opt/ltsp/i386/etc/lts.conf
- /etc/dhcp3/dhcpd.conf
- /etc/bind/debian-edu/db.intern
- /etc/bind/debian-edu/named-bind9.conf
- /etc/exports

- `/etc/init.d/enable-nat`
- `/etc/network/interfaces`
- `/etc/hosts.allow`
- `/etc/squid/squid.conf`
- Users of the editor vi can use `:%s/192.168/172.16/gc` which will search and replace, asking for confirmation in the process.
- Remember to take **eth1** down/up

ifdown eth1

ifup eth1

- Rename the file `/etc/bind/debian-edu/db.192.168` to `/etc/bind/debian-edu/db.172.16`
- This one is "funny", replace all instances of 168.192 with 16.172 in the file `/etc/bind/debian-edu/named-bind9.conf`
- Then you must restart bind, enable-nat, dhcp, exports and possibly also squid

/etc/init.d/bind9 restart

/etc/init.d/enable-nat restart

/etc/init.d/dhcp3-server restart

exportfs -ra

/etc/init.d/squid restart

9.8. NTP clockserver

9.9. CUPS printserver

Warning

There is a bug in pr05, see bug #967
(http://bugs.skolelinux.no/show_bug.cgi?id=967). You fix it by running the command

`ln -sf /etc/cups/cupsd-debian-edu.conf /etc/cups/cupsd.conf`

Once that bug is ironed out, adding printers and instantaneously making them available to all users, and seen by all server is a matter of simply just installing the printer.

If the printer is placed in the backbone switch, that is in the 10.0.2.0/23-network, logon to your Thinclientserver, or Combi-server, and use the built in printermanagement in KDE, which is just a graphic frontend to CUPS. Later you might opt for using a webbrowser and the address <http://tjener.intern:631> or <http://ltspsrver00.intern:631>, depending where you actually installed you printer.

Note: You must use Konqueror, Firefox will not work.

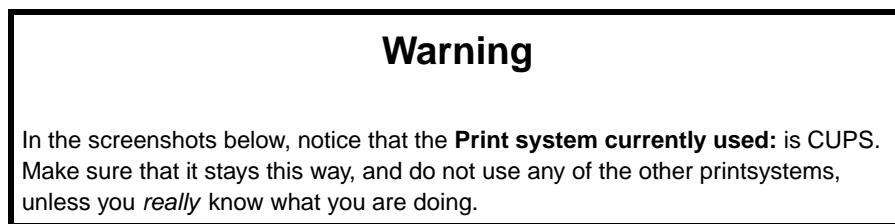


Figure 9-14. Konqueror with print:/

FIXME 50: description of image

First open Konqueror, or just your filemanager, and enter the address **print:/**, from there choose **Manager**

Note: If you are lazy, and a terminaljunkie, start it from the commandline

konqueror print:/

Figure 9-15. kprint:/ Add new printer

FIXME 50: description of image

Now go to **Add** and choose **Add new printers/classes**. You could of course just have started with the url print:/manager

Figure 9-16. KDE print welcome screen

FIXME 50: description of image

Here you just press **Next**

Figure 9-17. Choose what type of connection you have.

FIXME 50: description of image

Here you choose what kind of connection your printer has, I strongly recommend using a network printer, so in this case you must choose **Network printer (TCP)**, then choose **Next**

Figure 9-18. 333333333333

FIXME 50: description of image

Figure 9-19. 333333333333

FIXME 50: description of image

Figure 9-20. 333333333333

FIXME 50: description of image

Figure 9-21. 333333333333

FIXME 50: description of image

Figure 9-22. 333333333333

FIXME 50: description of image

Figure 9-23. 333333333333

FIXME 50: description of image

Figure 9-24. 333333333333

FIXME 50: description of image

Figure 9-25. 33333333333

FIXME 50: description of image

Figure 9-26. 33333333333

FIXME 50: description of image

Figure 9-27. 33333333333

FIXME 50: description of image

Figure 9-28. 33333333333

FIXME 50: description of image

Figure 9-29. 33333333333

FIXME 50: description of image

Figure 9-30. 33333333333

FIXME 50: description of image

9.10. DNS

9.11. Apache webserver

Skolelinux/Debian-edu comes with the Apache webserver, it almost works out-of-the bugs. It's just one small thing missing; telling the configuration file that the users home-directory is not in `/home`, but rather in `/skole/tjener/home0`. This has been reported as a bug, see bug 639 (http://bugs.skolelinux.no/show_bug.cgi?id=639). You must fix the config file `/etc/apache/httpd.conf` at about line 342, replace

```
/home/*/public_html
```

with

```
/skole/tjener/home0/*/public_html
```

Then Apache must be restarted

```
/etc/init.d/apache restart
```

Then make sure the the user has a directory called `public_html` with permissions 775

```
mkdir ~username/public_html  
chmod 755 ~username/public_html
```

If you don't feel like manually creating these `public_html` directories, then you can add them to `/usr/share/webmin/ldap-users/createhomedir` like this

```
# Make directory for public_html files, readable for everybody.  
mkdir "$homedir/public_html"  
chmod 0775 "$homedir/public_html"
```

have a look at default directories for your users.

If you already have created your users, this little one-liner will create `public_html` for all users:

```
for dir in $(getent passwd | grep home0 |cut -d":" -f6) ;  
do mkdir $dir/public_html ;  
chmod 775 $dir/public_html ;  
chown --reference $dir:$dir $dir/public_html ;  
done
```

Once the Apache config-file has been fixed, and the user has a directory `public_html` with *correct* permissions, then it's time to create a html-file, save it in `public_html` and see if this works. Create a document, in e.g OpenOffice.org, save it in html- format, and save it in the directory `public_html` under the name `index.html`

If everything works, you should be able to see that file in the url `http://tjener.intern/~username`

9.12. syslog server

Warning

Be aware that of the fact that the logfiles sometimes can become *really really* huge, and since they are placed in the directory `/var/log` which has limited space, they might fill up this partition 100% and then you will see services such as dhcp-server, proxy server, ldap authentication, simply stop functioning, since they can't write to any logfile. Therefore, make sure `/var/log` is big enough for all your logfiles.

If `/var/log` suddenly becomes 100% full, then you can either resize it, according to resize of `vg_system/lv_var`, or if you are in a hurry, delete some old logfiles. Look for files in `/var/log` with the a numeric extension, like `syslog.0`, these files can be deleted, of course any information they might contain will be lost.

A quick way to find 10 potential big files in `/var/log` is done like this

```
tjener:~# cd /var/log/
tjener:/var/log# ls -lSrSh | tail -n 10
-rw-r--r-- 1 root      root    255K 2005-10-26 20:36 base-config.log.1
-rw-r----- 1 root      adm     561K 2006-04-19 06:25 syslog.0
-rw-r----- 1 root      adm     694K 2006-04-19 20:22 syslog
-rw-r----- 1 root      adm     702K 2006-04-19 20:22 daemon.log
-rw-r----- 1 root      adm     805K 2006-04-16 06:46 daemon.log.0
-rw-r----- 1 root      adm     11M 2006-03-03 06:25 debug.4.gz
-rw-r----- 1 root      adm     12M 2006-03-03 06:25 kern.log.4.gz
-rw-r----- 1 root      adm     12M 2006-04-19 20:23 auth.log
-rw-r----- 1 root      adm     13M 2006-04-16 06:25 auth.log.0
-rw-rw-r-- 1 root      utmp    290M 2006-04-19 20:23 lastlog.0
```

here I would delete the files `lastlog.0` and `auth.log.0`

The mainserver in Skolelinux/Debian-edu is setup to receive the logfiles from the different machines in the Skolelinux/Debian-edu network, other machines such as Thin Clientserver, workstations. Other machines can be configured to send their logfiles to the mainserver as well, such as firewalls, routers and printers, this is achieved by specifying in the appropriate places on such devices the address **10.0.2.2** as remote syslog server.

In the case of the firewall/router Coyote Linux configuring it to use mainserver as remote syslog server is done during the creation of the floppy, but can also be done at a later time via `http://10.0.2.1:8180` and there look for "Optional Configurations" and the field "Remote Logging Host", in this image

Figure 9-31. Remote logging setup in Coyote Linux

logging setup in Coyote Linux

If you logon to your Coyote Linux firewall with ssh like `ssh root@10.0.2.1` then you can setup the

remote logging host using:

```
Coyote Linux Gateway -- Configuration Menu

1) Edit main configuration file          2) Change system password
3) Edit rc.local script file            4) Custom firewall rules file
5) Edit firewall configuration          6) Edit port forward configuration

c) Show running configuration          f) Reload firewall
r) Reboot system                     w) Write configuration to disk

q) quit                               e) Exit
-----
Selection: 1
```

and there add **10.0.2.2** to the line

```
LOGGING_HOST='10.0.2.2'
```

If you are using m0n0wall (<http://m0n0.ch/wall/>) then you do that under Diagnostics, Logs, Settings and there add **10.0.2.2** to "IP address of remote syslog server", like this.

Figure 9-32. Remote logging setup in m0n0wall

logging setup in m0n0wall

Once you have all machines and devices sending their syslog info to Mainserver, it's time to have a look at what is reported. The most important logfile is probably `syslog`, and looking at it in realtime as things are written to it is possible with **tail --follow /var/log/syslog**, here you see the log send by a Thin Clientserver as a thinclient boots up:

```
tjener:~#tail --follow /var/log/syslog
Dec 19 11:15:52 ltspserver01 dhcpd: DHCPACK on 192.168.0.10 to 00:01:02:4c:85:fb via eth1
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.0 to 192.168.0.10:20
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.0 to 192.168.0.10:20
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/01-00-01-02-4c-8
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A8000A to 192.
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A8000 to 192.1
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A800 to 192.16
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A80 to 192.168
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A8 to 192.168.
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0A to 192.168.0
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C0 to 192.168.0.
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/C to 192.168.0.1
Dec 19 11:15:52 ltspserver01 atftpd[22121]: Serving /tftpboot/pxelinux.cfg/default to 192.1
```

Note: You must be root to be allowed to read most of the files in `/var/log`. If you are logged on as a normal user, then you may become root with the command **su**

9.13. Webmin

9.14. Squid

Squid is a high-performance proxy caching server for web clients. What it actually does, is to try to prevent different users from fetching the same file several times, instead it keeps a copy of that file in it's cache, and the users get that copy instead. That is a lot faster than downloading the file every time, it's especially clear when you work with **apt-get**.

The squid server runs on the machine with the hostname **webcache**, which by default is the Main-server. Try to ping

ping -c4 webcache

and you will see which machine responds:

```
tjener:~# ping -c3 webcache
PING tjener.intern (10.0.2.2) 56(84) bytes of data.
64 bytes from tjener.intern (10.0.2.2): icmp_seq=1 ttl=64 time=0.117 ms
64 bytes from tjener.intern (10.0.2.2): icmp_seq=2 ttl=64 time=0.153 ms
64 bytes from tjener.intern (10.0.2.2): icmp_seq=3 ttl=64 time=0.126 ms

--- tjener.intern ping statistics ---
3 packets transmitted, 3 received, 0% packet loss, time 1999ms
rtt min/avg/max/mdev = 0.117/0.132/0.153/0.015 ms
```

The most obvious thing to adjust when it comes to how the Squid server works out-of-the box, is the size of it's swapfiles. The default size is 100MB, while it's dedicated partition `/var/spool/squid` is in most cases far bigger than that. Like in this case

```
tjener:~#df -h /var/spool/squid/
Filesystem                Size  Used Avail Use% Mounted on
/dev/mapper/vg_system-lv_squid 469M   95M  349M  22% /var/spool/squid/
```

In this case it would make sense setting the swapfiles size to something near 469M, you achieve this by editing the line about number 699 in the file `/etc/squid/squid.conf`, remove the comment-sign `#` in front of the line, and adjust it to look like this, creating a 400M size for the swapfiles

```
cache_dir ufs /var/spool/squid 400 32 256
```

Once that is changed, you need to stop squid, and resize it's swapfiles, then start squid again.

```
/etc/init.d/squid stop  
squid -z  
/etc/init.d/squid start
```

```
tjener:~# /etc/init.d/squid stop  
Stopping proxy server: (waiting....done) squid.  
tjener:~# squid -z  
2005/11/21 16:10:14| Creating Swap Directories  
tjener:~# /etc/init.d/squid start  
Starting proxy server: squid.
```

9.15. NFS-server

Chapter 10. Special Adaptations for your Users

There are many things you can do for your users, so that their experience of working with a Skolelinux/Debian-edu-machine will exceed anything they have known previously, believe me.

10.1. Deciding Which Directories the Users Should Have

To start with, every users get two directories created when the user is created

```
drwxrwx---      klaus klaus   priv
drwxrwxr-x      klaus klaus   pub
```

that is, a directory that is open for everyone to view, pub and one that is closed to other users priv.

If you aren't comfortable with the idea that your users are supposed to understand the concept of a closed (priv) and an open directory (pub) in their home directories you can change this. You can either lock the directories at the top level after the users are created

chmod 700 /skole/tjener/home0/*

or you can open them a little

chmod 711 /skole/tjener/home0/*

If you want your users to have several directories from the start, for example the directories mathematics, English, German, French, this can be done by changing a bit of the file /usr/share/webmin/ldap-users/createhomedir, by adding these lines:

```
# Make a directory related to the subject mathematics
mkdir "$homedir/mathematics"
chmod 0770 "$homedir/mathematics"
```

```
# Make a directory related to the subject English
mkdir "$homedir/English"
chmod 0770 "$homedir/English"
```

```
# Make a directory related to the subject German
mkdir "$homedir/German"
chmod 0770 "$homedir/German"
```

```
# Make a directory related to the subject French
mkdir "$homedir/French"
chmod 0770 "$homedir/French"
```

10.2. Automatic Start of Program at Login

There are some programs that your users surely use every time they login. So, it would be nice to be able to automatically start them up at login, instead of having to do it manually every time. This can be done by copying shortcuts to the program into the directory `.kde/Autostart` which is stored in the user's home directory.

The `Autostart`-directory is within a "hidden" directory, to be able to see this, you must go to the menu line in the Filemanager, click on View and then on Show Hidden Files. When you are done, you turn off the Show hidden files.

An easy way to get a hold of these short cuts is to first "drag" them from the K-menu by holding down the left mouse button and then "releasing" them on the desktop background, choosing "Copy here". Then you have a so-called shortcut file in the directory `Desktop`. You copy this file into the directory `.kde/Autostart`, which will automatically start the program when the user logs on.

10.3. Message to Users

10.3.1. Message to Everyone who Logs in

There is a program, `xmtd` - message-of-the-day browser that makes it possible to show the contents of a file when a user logs in to the system. This is useful, for example, when you want to give information about a new printer, planned down time, etc.

If you don't have `xmtd` installed, then you can install it with

`apt-get install xmtd`

Then you have to enable the program `xmtd` to be able to show a file when the user logs in.

Add these lines to the file `/etc/X11/Xsession`

```
xmtd -popdown 25 -geometry 500x500 /usr/local/mtd \  
-xrm "*title.label: Today's Message" -always
```

This will then show the contents of the file `/usr/local/mtd` when the user logs in. **-popdown 25** means that the message will disappear after 25 seconds, while **-always** means that the message will be shown every time a user logs in.

Have a look at the manual page for `xmtd` for a description of the other choices. You can view the manual page from the command line with the command **man xmtd**.

10.3.2. Message to a Specific User who Logs in.

Sometimes it's necessary&desirable to give a message to a specific user when they log in, for example when the user has used too much space on the hard drive. This is done by adding a few lines to the file `/etc/X11/Xsession`

```
if [ -e "/usr/local/message/$USER" ]; then
exec /usr/X11R6/bin/xmessage -file /usr/local/message/$USER &
fi
```

By creating a file with the name `klaus` in the directory `/usr/local/message/` then this file will be shown when the user `klaus` logs in.

10.3.3. Giving a Message to All Users That are Logged on

Warning

This has not yet been verified to work with Sarge.

If you have a machine where you have installed *both* main server and thin client server, then you can use a little Perl script to give a message to all users that are logged on.

```
#!/usr/bin/perl -w

if (@ARGV != 3){
    print "Use:\n\txwall.pl keyword time message\n";
    print "\t keyword is the word you search with\n";
    print "\t time is the time in seconds you want the message to be visible\n";
    print "\t message is the message, should be written inside quotation marks\n";
    exit (1);
}

$SIG{CHLD}="IGNORE"; # in the unlikely event a child exits before the parent

my ($procmatch, $timeout, $message) = ($ARGV[0],$ARGV[1],$ARGV[2]);

foreach $pid (split /\s/,`/bin/pidof $procmatch`) {
    my ($display, $xauthority, $homedir);
    foreach $envvar (split /\00/,`cat /proc/$pid/environ`){
        if ($envvar=~^DISPLAY=(.*)/){ $display = $1; }
    }
}
```

```

foreach $var (split /\n/, `cat /proc/$pid/status`){
    if ($var =~ /Uid:\s+(\d*)\s+/) { my @uid = getpwuid($1); $homedir = $uid
}

if ($display){
    if (fork() == 0) {
        $ENV{DISPLAY}=$display; $ENV{XAUTHORITY}="$homedir/.Xauthority";
        exec("xmessage -center -timeout $timeout '$message'");
    }
}
}

```

This script is then saved as `xwall.pl` and used in the following manner

perl xwall.pl alarmd 10 "Hi! You will see this message for 10 seconds."

Sometimes it can be a bit tricky to find a process that can be used as a keyword that covers all logged in users. I have had good experience with using the process `alarmd` as a keyword. Try the command **ps auxw|grep alarmd** then you will see if this keyword works for you.

Figure 10-1. Message to Everyone Logged in

FIXME 51: description of image

10.3.4. Automatic User Log In

Warning

This is *not* smart security-wise, but very nice if, for example, you have a Skolelinux/Debian-edu network at home and you are the only user. Be aware that the user in question will be able to log in without being asked to give a password.

It is possible to automatically log in a specific user on a specific thin client when it gets turned on. This is done in the file `/etc/kde3/kdm/kdmrc` where the following lines are added:

```

[X-ltsp010:0-Core]
AutoLoginEnable=true
AutoLoginUser=klaus

```

Here the user **klaus** gets automatically logged in to the thin client **ltsp010** when it gets turned on. In order for this to work, you need to lock the MAC address to the IP-address.

```

[X-ltsp058:0-Core]
AutoLoginEnable=true
AutoLoginUser=test

```

In this case, the user **test** gets automatically logged in on the thin client **ltsp058**.

Automatic User Log In- Advanced Use

The possibility to log in people without having to type in usernames or passwords is really great when you want to stress test a Skolelinux/Debian-edu installation. You create a series of test users which are set up for automatic log in. That way you can get find out how the system behaves when there are many users logging in at the same time. If you combine this with automatic start, see Section 10.2 of several of the heavier applications such as Gimp, OpenOffice.org, Firefox, KStars then this test will be even more effective.

10.3.5. Automatic Input of Username in the Login Window

If you have a thin client placed where there is always one single user who logs in, such as in an office, it may be fine to set things up so that the user doesn't have to type in their username but just their password. You can do this by adding the following lines to the file `/etc/kde3/kdm/kdmrc`

```
[X-ltsp059:0-Greeter]
PreselectUser=Default
DefaultUser=perbart
```

That way the thin client **ltsp059** has already filled in **perbart** as username; the only thing the user has to type in is his password. If some other user than **perbart** wants to use that thin client, they can easily do so by removing **perbart** from the login window and typing in their own username.

10.4. Setting up Desktop, Menu bar, etc the Same for Everyone When the User is Created

There are some people who think that the appearance of the "desktop" which accompanies Skolelinux/Debian-edu is not totally optimal. Maybe you would like to give all of your users another background picture, other icons on the desktop, other icons on the K-menu and taskbar in KDE. It would be great if that could be done in such a way that everything was done once and for all in a simple fashion.

The secret lies in placing the files that you want all of your users to get when each user is *created*, in the correct directory, in this case in the directory named `/etc/skel`. If your users already exist, then see 7 of Section D.4.

Everything that is placed in the directory `/etc/skel` will get copied to the user's home directory when the user is created. For example, if a file `test.txt` is placed there, then it will be put in the home directory with the correct permissions and ownership.

What we want is for everyone from the start should get a predefined setup of background, desktop, K-menu, etc in KDE. The way this is done is to make a user which serves as a template. Call this user, for example, **golden**, see Chapter 11 to find out how to create a user. Now log in as this user and set up thing the way you want them to be. Then copy the directory that contains all of the relevant KDE configuration files into `/etc/skel`. You find the KDE configuration files in the directories under `.kde`

First create the directory `/etc/skel/.kde` with the command **mkdir /etc/skel/.kde**, then do the copying with the command

```
cp -ar /skole/tjener/home0/golden/.kde/* /etc/skel/.kde
```

Everything you see in your KDE desktop environment is a setting in one or another KDE configuration file. For example, the attributes for your shortcut icons are covered in the file `Desktop/something-or-other.desktop`. The following is part of the contents in the shortcut for OpenOffice.org Writer

```
[Desktop Entry]
Version=1.0
Encoding=UTF-8
Terminal=false
Categories=Application;Office;
Icon=ooo_writer
Exec=/usr/bin/oowriter %U
Type=Application
Name=OpenOffice.org Writer
Comment=OpenOffice.org Text Document
StartupNotify=false
```

Here you can see clearly how you can make changes to attributes such as the file path to where the program is stored, what kind of picture that is to be used for the icon, etc.

10.4.1. The Kicker, the Bottom Menu Line

Figure 10-2. Kicker

FIXME 52: description of image

Another important directory for KDE configuration files is `.kde/share/config`. This is where you find almost all of the configuration files for KDE programs. The niftiest one to know about is the file `.kde/share/config/kickerrc` which determines the appearance of the panel at the bottom of your screen.

10.4.2. Desktop Icons, Background

Whatever you have on the desktop in the way of icons and other types of shortcuts is determined by the contents of the directory `Desktop`. Everything in the directory `/etc/skel/Desktop` winds up on the desktop for all new users. Copy shortcuts that you want everyone to have into this directory; see Section D.4 to find out how these `.desktop`-files can be copied.

Chapter 11. Useradministration with WLUS in Webmin

During the installation of Skolelinux/Debian-edu, see Figure 7-6 you were asked to set a password. This password is the basis for 2 different passwords. One of them you use to login to Webmin, at the same time it is also the root password. The other is the LDAP password. To change the root/Webmin password, you can either use the command line with the command **passwd** or you can use the program **kdepasswd**, which you find in K-menu→Run command ...→**kdepasswd**.

```
tjener:~# passwd
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
```

To change the LDAP-admin password, aka the one you use once inside Webmin, when you want do add/delete/modify users, you use a script from the commandline,

```
tjener:~# /usr/share/debian-edu-config/tools/passwd admin
Enter new password for user admin:
Reenter new password:
Enter LDAP Password:
```

Note: You could also use this script to change the password of users.

Note: This should later be moved to Services out-of-the-box

11.1.

There are several systems for user information and administration in Skolelinux/Debian-edu, but now we use LDAP and the utility WLUS, and *not* `/etc/passwd` and its accompanying commands such as **adduser**, **useradd**, etc.

To get access to Webmin, point your favourite web browser to the address `https://tjener.intern:10000/ldap-users` (`https://tjener.intern:10000/ldap-users`) You can use any webbrowser you want. You can also connect a Mac machine and run it from there, as long as the machine is within either of the

Skolelinux/Debian-edu networks 10.0.2.0/23 or one of the 192.168.0.0/24, otherwise you need some advanced portforwarding on your firewall/router.

Note: In the rare case that the link above doesn't take you directly to the correct Webmin module (Administrate users in ldap), but rather to the general Webmin startpage, then you find it under the tab **System**

Figure 11-1. Webmin Login

Login to Webmin

The first thing you see is a dialogue box where you log yourself in as the user root, with the password you created during installation, see Figure 7-6

If you login as a regular user, you may change your own password. This is actually the *only* way a users password should be changed, *do not* use the command **passwd** to change a users password.



Figure 11-2. Welcome Screen Webmin LDAP User Simple (WLUS)

Opening screen of Webmin LDAP User Simple (WLUS)

After you have logged in to Webmin you will see this welcome screen for WLUS.

Because we haven't added any users yet, it would be natural for us to choose "New User(s)". But before we do that, we may want to adapt WLUS to our needs.

Figure 11-3. Configuration of WLUS

Configuration of WLUS

By clicking on "Module Config" we can change how strict we want our password policy to be, as well as where we want to put our users' home directories, plus other things. When you are done making your changes, click on "Save". Then you are ready to create new users. The first thing you need to do is make a test user. This is a user that functions as a template for setting up things exactly the way you want it to be for all of your users. Have a look at Chapter 10

Note: All these configuration is stored in the file `/etc/webmin/ldap-users/config`, which you can edit directly with a texteditor, such as nano

11.1.1. Manually move homedirectory and update info in ldap

If you prefer to have you users grouped into different directories, maybe according to which group they belong to, then you change that here, in the files with **The prefix of the user home directory**. Make sure you first create that sub-directory, with **mkdir /skole/tjener/home0/2006**, then you can use in the prefix-field `/skole/tjener/home0/2006`. From then on, all users that you create will be placed in `/skole/tjener/home0/2006`, change that later when you want users placed elsewhere.

If you forget to use the right prefix in the configuration, you have the possibility of running a script on the commandline that will rectify that error.

Lets take as example the user **demo4**, let's say we would like him to have homedirectory in `/skole/tjener/home0/2006`, but we forgot to change the prefix parameter in the config file, so we must do it manually later. First we must create the directory 2006 in `/skole/tjener/home0`, then we must move the users homedir, and update the info in the ldap-database.

First lets see what kind of info we have on the user **demo4**.

```
tjener:~# getent passwd demo4
demo4:x:10016:10016:Test User:/skole/tjener/home0/demo4:/bin/bash
```

Here we clearly see that the users have homedirectory in `/skole/tjener/home0/demo4`. Then we run the script without any arguments, so that it tells us what arguments it expects:

```
tjener:~# /usr/share/debian-edu-config/tools/movehome
usage:\n\t/usr/share/debian-edu-config/tools/movehome <username> <newhome>
```

Now that we know the arguments it expects, lets use that

```
tjener:~# /usr/share/debian-edu-config/tools/movehome demo4 /skole/tjener/home0/2006
ldap_initialize( ldaps://ldap/ )
Enter LDAP Password:
replace homeDirectory:
        /skole/tjener/home0/2006/demo4
modifying entry "uid=demo4,ou=People,dc=skole,dc=skolelinux,dc=no"
modify complete
```

Notice that the argument `<newhome>` doesn't include the username portion of the homedirectory. Lets now restart the name service caching daemon, to speedup the updating of this new userinformation

```
tjener:~# /etc/init.d/nscd restart
```

Now lets see if this user has a new location of it's homedir, and that this information also is reflected in the ldap-database.

```
tjener:~# ls -lh /skole/tjener/home0/2006/
total 4,0K
drwxr-xr-x  5 demo4 demo4 4,0K 2005-11-21 17:47 demo4
```

The homedirectory has been moved.

```
tjener:~# getent passwd demo4
demo4:x:10016:10016:Test User:/skole/tjener/home0/2006/demo4:/bin/bash
```

The info has been updated in the ldap-database as well.

Warning

Although this seemed relatively easy to do, the implication of doing something wrong is huge. If you type the wrong password, the homedirectory *will* be moved, but the info in the ldap-database will not change, you are then left with a user where the system thinks the homedirectory is somewhere else than it actually is. The solution; call someone who can hack your ldap-database, or delete and add that user again. The script itself contains these calming words:

```
# This tools take 2 parameters
# User name and the location of the new home directory
# use at own risk
```

11.1.2. New user

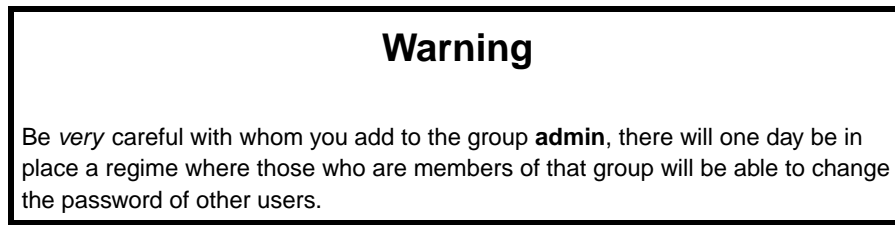
Figure 11-4. New User

FIGME 66: description of image

Now you should be ready to create new users. The first thing you should do is to create a test user. This is a user that you use as a template for setting up things exactly the way you want things to be for all of your users. Have a look at Chapter 10. There are two different ways to add new users, either one at a time, or a whole bunch at once using a fileimport with a so-called semicolon-separated file(;). By clicking on "New User(s)" you get up a rather long page. At the top is the possibility to add users manually one by one, by providing first/last name, together with password, if desired. A little farther down the page, you find the possibility to add several users at once, "Add users from file"

When you add a user in this way, the computer provides the username, and if you want, the password as well. But you can override this by ticking "Common password - Yes" and then typing in the password you want.

Remember to also choose what kind of role you want the new user to have.



Note: Make sure that a normal user doesn't get the role **admin**, that user may then possibly in the future be able to change passwords of other users.

Figure 11-5. Result of New User

FIXME 67: description of image

When new users have been added using WLUS, you get a receipt with information about name, username and password, in a format that makes it easy to print it out, clip it up and give it to the user.

11.1.3. New users

Figure 11-6. The format of the importfile in a spreadsheet

10 users in a spreadsheet

It is also possible to add an entire class of users, or even a whole school. By using the other way of adding users, that is the so-called semicolon-separated file. You can use a spreadsheet to create your batch of users, and then "save as" csv/comma separated value. 10 users, with username, first name, last name and password might look like this.

This file is formatted with the different fields separated by a semicolon. You can create this file by exporting it to a semicolon-separated file from the school's database of attending pupils, or by exporting from OpenOffice.org Calc/Excel, or by using a regular, simple text editor such as nano. Most schooladministrative systems also have option of exporting to csv-format.

Figure 11-7. File Import

FIXME 69: description of image

In order to use the file import function, you have to scroll down to the bottom of the page where you find a dialogue box for adding users from file. Click on browse to find your file with the semicolon-separated users. When you have found that file, click on "Add users from file"

Figure 11-8. Importing Users from File

FIXME 70: description of image

When you have got the file with the users, you will see the different semicolon-separated items listed in different columns. At the top of each column you choose the name for its content; as a minimum you should have first name and last name.

Figure 11-9. Result of File Import

FIXME 80: description of image

When you add users from file, you get a nice list of the new users' usernames and passwords, in a format that is easy to print out and distribute to the user.

11.1.4. Editing users, disable/enable login, delete users

Figure 11-10. List of Registered Users

FIXME 81: description of image

By clicking on "Search" without filling in the search field, you get a list of all users who are registered. By clicking on "User Data" you get the possibility of changing the password for that user, as well as other things such as the name of the user. If you want, you can also choose to move the users home directory, but you will need to personally move the files in question since this is *not* done by WLUS. See manually move homedirectory

Figure 11-11.

FIXME 82: description of image

When users are on the system, there are some extra possibilities to choose from, such as "Delete user", "Disable Login and Enable Login.

Figure 11-12. Disable Login

FIXME 83: description of image

By putting a cross in front of a user, and choosing for example "Disable Login" that user will not be allowed to login.

If you had search based on groups, you would have the possibility to disable a whole group of users with just one click.

The result of having chosen "Disable Login" is seen as a fine red cross for that user.

Figure 11-13. Re-enabling Login

FIXME 85: description of image

By putting a cross in front of the user and clicking on "Enable Login" you will see a green cross reappear in front of that user. The user can login again.

11.1.5. Changing a User's Password

You first search for the users in question, either by his fullname, or by his loginname, once you have found him, click on "User Data", this will bring up a interface where you can change the users password.

Figure 11-14. Change a users password

FIXME 89: description of image

11.1.5.1. User changing his own password

If the users knows his password, his can himself change it to something else, also using any webbrowser and the address <https://tjener.intern:10000/ldap-users>

Figure 11-15. Users logins into Webmin as himself

FIXME 89: description of image

The users uses his own username and password to login to Webmin

Figure 11-16. WLUS for the user

FIXME 89: description of image

When an ordinary user logs into webmin, he only has access to wlus, and only to the part concerning himself.

Figure 11-17. Users changes his password

FIXME 89: description of image

The new desired password *must* be entered twice, once in the field "User's Password", and again the same in "Reconfirm User's Password, and also the old password in the field "Old Password", and also do not forget to press "Commit User Data Changes".

Figure 11-18. Change was successful

FIXME 89: description of image

Look out for the feedback written in red at the top, saying "Change was successful!!". If you don't see this, something went wrong.

11.1.6. Changing a User's Password from the Command Line

You can change the password for a user from the command line if you know the person's username.

`/usr/share/debian-edu-config/tools/passwd username`

You will be asked to type in a new password twice, and then finally you must type in the LDAP-administrator password.

11.1.7. Changing the LDAP-Admin Password

In order to make changes in LDAP, such as adding users, changing passwords, etc, you must give a password, the so-called LDAP-admin password. This password is created during installation; see Figure 7-6. This password is one of 2 administrative passwords. The other is the root password, see Figure 7-6, which also is the one you use to login to Webmin with.

The LDAP-admin password is changed from the command line with this command

`/usr/share/debian-edu-config/tools/passwd admin`

Then you will be asked to provide the new password twice, as well as to type in the old one.

```
/usr/share/debian-edu-config/tools/passwd admin
Enter new password for user admin:
Reenter new password:
Enter bind password:
```

11.1.8. Direct Editing of Files in the LDAP-Database.

By using the command

```
slapcat -l /root/users.ldif
```

you will get a pure text file that contains the LDAP database. In this case, this is in the file named `/root/users.ldif`. This is a so-called ldif-file, ergo the file type "ldif". You must stop the slapd LDAP daemon, before you bring up this ldif-file. This is, along with stopping nscd (Name Service Cache Daemon) is done with the commands

```
/etc/init.d/slapd stop
/etc/init.d/nscd stop
slapcat -l /root/users.ldif
```

Be aware that when you stop slapd, no one can login. Then you have to start it up again.

```
/etc/init.d/slapd start
/etc/init.d/nscd start
```

You can edit this file `/root/users.ldif` with the help of your favourite text editor, for example nano. See Section 8.2.2.

In this file you can make changes in usernames, home directories, groups, etc., the same as when you use the user administration module in Webmin, Chapter 11. The advantage of using an ldif-file is that you can change several things at once. This is the file you use if you have to reinstall and want to use the same usernames and passwords again- it is a little tedious to have to hand out 1000 new usernames and passwords.

11.1.8.1. Putting the Old LDAP Database in a New Installation

Note: This doesn't currently work as expected in Sarge, due to some problematic Samba SID that changes across reinstallations.

Sometimes you just have to do a reinstallation. In order not to inconvenience the users too much, it's nice to let them keep using their old passwords and usernames. If you have that specific ldif-file from LDAP, then you can just put it in the new installation and your users will be able to continue to use their old usernames and passwords.

Recipe for Carrying Over the LDAP Database

- On the old server, before you do the reinstallation, take out an ldif-file from LDAP,

```
/etc/init/slapd stop  
slapcat -l /root/users.ldif
```

Remember that whenslapd is stopped, no one can login.

- Move this file, /root/users.ldif, over to the new installation, either by using a USB-pendrive, or by using a CD.
- In order to be able to put in the old LDAP database with the help of your users.ldif, you have to delete the one that is already there. The database files are found in /var/lib/ldap. A good way to get rid of them is to move them to another directory, just in case you need them later.

```
mkdir /root/dbb  
/etc/init/slapd stop  
/etc/init.d/nscd stop  
mv /var/lib/ldap/* /root/dbb  
slapadd -l users.ldif  
/etc/init/slapd start  
/etc/init.d/nscd start
```

Now it's possible to use the old usernames and passwords. Remember that the old Webmin root password is the one to use.

11.1.9. How to Start with a New "Fresh" LDAP Database?

Sometimes you can get in a situation where someone has experimented a little too much with various configurations, maybe so much that reinstallation would be the easiest thing to do.

If that happens with LDAP, there is a simpler way to "start from scratch" than to reinstall the whole system. You can delete your LDAP database that doesn't function the way you want it to, and then put in a new and unused one, in the same condition as it was right after installation. This means that all of your current users will be deleted.

The first thing you have to do is to make a copy of your current LDAP database, no matter whether it functions or not.

- Stop slapd-daemon and nscd

```
/etc/init.d/slaped stop  
/etc/init.d/nscd stop
```

- Make a copy of the old LDAP database, that is create a so-called ldif-file

```
slapcat -l /root/ldap.old.ldif
```

- Delete the old LDAP database

```
mkdir /root/dbb.old  
mv /var/lib/ldap/* /root/dbb.old
```

- Now you can put in a new, clean LDAP database with the command

```
ldap-debian-edu-install
```

- Delete the home directories for the users whom you have just thrown out, 'rm -rf' deletes the entire directory, without asking any questions. Be careful!

```
rm -rf /skole/tjener/home/user1  
...  
...  
rm -rf /skole/tjener/home/user2
```

Be aware that you are now permanently deleting these home directories. Just in case you might regret this action later, it's wise to take a backup before you delete them. See Section 9.4

- If this doesn't work, you can put in the old LDAP database again

```
/etc/init.d/slaped stop  
/etc/init.d/nscd stop  
mkdir /root/dbb2.old  
mv /var/lib/ldap/* /root/dbb2.old  
slapadd -l /root/ldap.old.ldif  
/etc/init.d/slaped start  
/etc/init.d/nscd start
```

- Once in a while, it's wise to make a copy of the LDAP database,

```
/etc/init.d/slaped stop  
slapcat -l /root/ldap.TodaysDate.ldif  
/etc/init.d/slaped start
```

11.1.10. Delete a user, or group of users

If you want to delete users, you have to choice of deleting one by one, or deleting a whole group of users at once. When you just want to delete one user, you first find that user, then place a mark in the selection box, and delete him, simple. If you want to delete a whole group of users, then you search based on groups, you then see a new option: "Delete Selected and all users in groups", this will delete that group and all users in that group as well.

Notice that when you delete a user in WLUS, it doesn't relay get deleted, it is more like a permanent form of disabling. The user is still in the LDAP-database, and the homedirectory is still there. This makes it not possible to re-create a user with the same username, because it's already there, but disabled. Have a look at the contents of `/skole/tjener/home0`

```
d----- 5 10013 10013 4096 2005-11-21 17:47 demo1
d----- 5 10022 10022 4096 2005-11-21 17:47 demo10
d----- 5 10014 10014 4096 2005-11-21 17:47 demo2
d----- 5 10015 10015 4096 2005-11-21 17:47 demo3
d----- 5 10017 10017 4096 2005-11-21 17:47 demo5
d----- 5 10019 10019 4096 2005-11-21 17:47 demo7
d----- 5 10020 10020 4096 2005-11-21 17:47 demo8
d----- 5 10021 10021 4096 2005-11-21 17:47 demo9
```

The just deleted users homedirectories are still there, but, notice the permissions, they are ownerless and without any permissions at all.

If you relay want to remove and delete this users from the system, remove their homedirectories and usernames from the LDAP-database, then there is a script that will do that for you:

`/usr/share/debian-edu-config/tools/ldap-user-clean-attic.sh`, lets run it without any arguments, see what it expects:

```
tjener:~# /usr/share/debian-edu-config/tools/ldap-user-clean-attic.sh
```

```
usage: /usr/share/debian-edu-config/tools/ldap-user-clean-attic.sh <NUMBER_OF_DAYS>
      where NUMBER_OF_DAYS is the limit of which to delete users
      users will be delete from the "attic"
      and their home directory will be removed
```

So running it with the argument 0 will delete all deleted users.

```
tjener:~# /usr/share/debian-edu-config/tools/ldap-user-clean-attic.sh 0
Enter LDAP Password:
```

Chapter 12. Configuration/Use of the Most Used Programs

12.1. Konqueror, File Manager

You find the file manager in K-menu—>Home Directory

Your home directory is that part of the hard drive where your files are stored. The symbol for your home directory is a house.

The file manager is, in fact, a web browser called Konqueror. In its current version, Konqueror is not a very good web browser. However, it does function great as a file manager.

Figure 12-1. File Manager, Home Icon

FIXME 109: description of image

I think it's nice to "see" what I've got in my files, by going to the menuView—>Preview and by clicking on, for example, "Images", then you can see things a bit more clearly.

You can create new directories/folders by right-clicking somewhere in the background of the file manager. Then a menu pops up where you then choose "Create New" and "Directory". If you want to move a file into another directory, then you can simply "drag" it over to the directory in question by holding the left mouse button down while moving the file over to the directory, then releasing the button when you are over the directory. Alternatively, you can press the right mouse button (that is, right-click) on the file you want to move and a menu pops up. Click on **Cut**, then find the directory you want to move the file to, right-click on that directory and another menu pops up. Choose **Paste** and the file is transferred.

Sometimes it's good to be able to see the contents of two directories simultaneously. You can make this happen by choosing Window—>Split View Left/Right. Then you can easily move files in a clear manner between directories.

12.2. Mozilla-Firefox

The version of Mozilla-Firefox that officially accompanies Debian Woody/Skolelinux is version 1.0.4, I

will refer to it as Firefox

12.2.1. Acrobat Reader as Plugin for Firefox/Konqueror

By having the line

```
deb ftp://ftp.nerim.net/debian-marillat/ sarge main
```

in `/etc/apt/sources.list` then you can use the command

apt-get install mozilla-acroread acroread-plugins

to add a plugin that starts Acrobat Reader when you want to view a pdf-file using Firefox.

12.2.2. Adding a Plugin to view NRK-TV and other film clips on the Internet

You need to install mplayer first. Then you add a so-called plugin that starts mplayer in the web browser when it is needed. You will find instructions for the installation of mplayer here: Section 13.2. The plugin is called mplayerplug-in and can be installed with

apt-get install mozilla-mplayer

12.2.3. Macromedia Flash Player Plugin for Firefox

This package comes from the same place as mplayer and Acrobat Reader, that is, `ftp.nerim.net`. Make certain that that line is active in the file `/etc/apt/sources.list`. Then you just install it with

apt-get install flashplayer-mozilla

Chapter 13. Useful Programs that are not Included on the Skolelinux/Debian-edu CD

13.1. Acrobat Reader

By using your favourite text editor to add the line

```
deb ftp://ftp.nerim.net/debian-marillat/ sarge main
```

to the file `/etc/apt/sources.list`, see Section 8.2.1, and then updating the database, you can then use your favourite package manager (see Section 8.9 or 5) to install Acrobat Reader

These are the necessary packages to install

```
tjener:~# apt-cache search acrobat
acroread - Adobe Acrobat Reader: Portable Document Format file viewer
acroread-plugins - Plugins for Adobe Acrobat(R) Reader
mozilla-acroread - Adobe Acrobat(R) Reader plugin for mozilla / Konqueror
```

These can be installed with the command

```
apt-get install acroread acroread-plugins mozilla-acroread
```

13.2. Mplayer

This is a super multimedia player, which you can use to play DVD, AVI, MPEG, WMV, etc.

This program is not included with Skolelinux/Debian-edu; it must be downloaded. To do this, you have to add the following line to the file `/etc/apt/sources.list`

```
deb ftp://ftp.nerim.net/debian-marillat/ sarge main
```

and then complete the installation process with the command

```
apt-get update
```

```
apt-get install mplayer
```

Of course, you can use your favourite package manager instead, such as `dpkg`, or `dpkg-query`

Appendix A. Integration of Other Linux Distributions into Skolelinux/Debian-edu with ldap and autofs

These are some short notes, I'll use Ubuntu 5.10 and plain Debian Sarge as examples.

The server is based on Skolelinux/debian-edu pr05, which is Sarge based. First on the Ubuntu machine, you must enable the universe package repository, by adding/uncommenting these lines to your `/etc/apt/sources.list`

```
deb http://no.archive.ubuntu.com/ubuntu breezy universe
deb http://security.ubuntu.com/ubuntu breezy-security universe
```

Then do your apt-get update You need some packages installed on Ubuntu for all this to work:

apt-get install autofs-ldap ldap-utils libldap2 libnss-ldap libpam-ldap nscd nfs-common

Also install ssh, as that is very handy to have installed, and Ubuntu doesn't install it as default:

apt-get install ssh

Just press [Enter] and accept whatever default you are presented with regarding ldap and so on, we will take care of the configuration files later. From a Skolelinux/Debian-edu (in this case based on pr05) workstation take the following files/directories:

- `/etc/pam.d`
- `/etc/nsswitch.conf`
- `/etc/libnss-ldap.conf`
- `/etc/nscd.conf`
- `/etc/default/autofs`
- `/etc/init.d/autofs`
- `/etc/ldap`
- `/etc/pam_ldap.conf`
- `/etc/auto.master`

There might be files included here, that is not necessary for making ldap/autofs work, someone should comment on that, please. For those without a Skolelinux/debian-edu workstation, I've uploaded these files to <http://www.skolelinux.no/~klaus/skolelinux.ldap.autofs.tgz> You should also take a backup copy of these files on your Ubuntu machine, before installing these files from Skolelinux/Debian-edu: this is a handy way of doing that:(\ means one long line)

```
tar zcvf Ubuntu.ldap.autofs.backup.tgz \  
/etc/pam.d \  
/etc/nsswitch.conf \  
/etc/libnss-ldap.conf \  
/etc/nscd.conf \  
/etc/default/autofs \  
/etc/init.d/autofs \  
/etc/ldap \  
/etc/pam_ldap.conf \  
/etc/auto.master
```

It's almost the same way for copying these files from the Skolelinux/Debian-edu machine:(\ means one long line)

```
tar zcvf skolelinux.ldap.autofs.tgz \  
/etc/pam.d \  
/etc/nsswitch.conf \  
/etc/libnss-ldap.conf \  
/etc/nscd.conf \  
/etc/default/autofs \  
/etc/init.d/autofs \  
/etc/ldap \  
/etc/pam_ldap.conf \  
/etc/auto.master
```

Transfer this archive Skolelinux.ldap.autofs.tgz over to the Ubuntu machine somehow, maybe with scp

```
scp skolelinux.ldap.autofs.tgz username@ubuntumachine:~/
```

Become root, then unpack the archive skolelinux.ldap.autofs.tgz

```
tar zxvf skolelinux.ldap.autofs.tgz -C /
```

Create the automount point on Ubuntu

```
mkdir /skole
```

Unless you add your Ubuntu machine to the Skolelinux/debian edu netgroups, it's won't be able to mount your home-dirs, have a look at <http://www.skolelinux.no/~klaus/newnotater/x2097.html> When this is all done, reboot the Ubuntu machine. When it starts again, you should be able to verify that ldap is working in Ubuntu by running:

```
getent passwd
```

and seeing all your Skolelinux/debian-edu ldap-users Running

```
su - username
```

should let you become that user, and that users home-dir should now automatically be mounted from Skolelinux/debian-edu. You should now be able to login, with you username/password and homedir from Skolelinux/debian-edu.

Appendix B. Seamless Integration of Mac OS X Machines

Warning

This might/might not work, I haven't had a Mac-machine to test for almost some years.

In L-97 (the current Norwegian National School Curriculum) there are some goals that would be more easily facilitated through the use of Mac OS X machines, especially in the areas of Art and Crafts. So it would be great if these machines could be integrated with the rest of the Skolelinux/Debian-edunetwork, same password/username and home directory.

I used *IKT-driftshåndbok for Skolelinux*

(<http://developer.skolelinux.no/dokumentasjon/IKT-bok.en.html#id2497724>) as a starting point, with the following changes:

- On the Skolelinux/Debian-edu Main server I did *NOT* put in insecure in the exports file `/etc/exports`
- In order to get automount to function, I created this file on the Mac

```
{
  "name" = ( "mounts" );
  CHILDREN = (
    {
      "opts" = ( "-P" );
      "name" = ( "tjener:/skole/tjener/home0" );
      "type" = ( "nfs" );
      "dir" = ( "/skole/tjener/home0" );
    }
  )
}
```

and named it the `mounts_table`. Then run the command **`sudo niload -r /mounts . < mounts_table`**

Appendix C. Smarttech Touchboard

Warning

It is to my knowledge not possible to setup Smartboard on a LTSP-based thinclient, it might be theoretically possible, since some touchscreens are indeed supported, but I haven't managed, or even tried that with Smartboard.

It is also to my knowledge not possible yet with the provided software from Smarttech to use the USB-cable on Linux, although the Linux kernel recognises the device when plugged in with USB-cabel, my advice is to demand a fix for this.

C.1. Setup

A touchboard is a big, touch-sensitive board, which together with a video projector, makes it possible to stand up "by the board" and press and write on it, about the same as you would do with a regular whiteboard.

Warning

I have only got experience with connecting it via PS/2 (Mouse), and not USB. If your Smartboard has a USB connection to your computer then this recipe may not be very helpful for you. You will then need to get in touch with the dealer/importer for help.

In order to get a Smarttech Touchboard to function you need to download and install the SMART Board software. The latest version is SMART Board software version 8.0.0, which can be downloaded from *smarttech.com* (<http://www.smarttech.com/support/software/unix.asp>), where you will find versions for Red Hat Linux 7.1 or higher, Mandrake Linux 9.1 and SuSE Linux 8.2 (all of these versions are identical). No versions are available for Debian or Skolelinux/Debian-edu. Fortunately, the ones that are available also work for Skolelinux/Debian-edu right out-of-the-box.

The program to be downloaded is called `Linux_SMART_Board_Software.bin`. In order to install it, you need to make it ready to run with this command:

```
chmod 755 Linux_SMART_Board_Software.bin
```

After that you can install it with

```
./Linux_SMART_Board_Software.bin
```

You may see a message complaining that you haven't installed the package `libstdc++2.9-glibc2.1`. If so, you can install that with this command:

apt-get install libstdc++2.9-glibc2.1

The board is usually connected to the computer via the serial port `/dev/tts/0`. To start with, the port is set up this way

```
stat /dev/tts/0
  File: "/dev/tts/0"
  Size: 0          Blocks: 0          IO Block: 1024   Character Device
Device: 6h/6d  Inode: 347          Links: 1          Device type: 4,40
Access: (0660/crw-rw- - - -)  Uid: (  0/   root)   Gid: ( 20/ dialout)
Access: Thu Jan  1 01:00:00 1970
Modify: Wed Feb  4 16:00:48 2004
Change: Wed Feb  4 15:56:32 2004
```

which means that normal users cannot use it. A simple, but temporary solution, which is gone as soon as you restart the machine, is **chmod 0666 /dev/tts/0**. If you want to make the change permanent, you need to use your favorite text editor to change a line in the file `/etc/devfs/perms`. By changing this line

```
REGISTER ^(tts|cua)/[^/]*$          PERMISSIONS root.dialout 0660
```

to

```
REGISTER ^(tts|cua)/[^/]*$          PERMISSIONS root.dialout 0666
```

the serial port will be accessible to all users. If you aren't comfortable with having absolutely everybody being able to use the serial port, you can establish a group and then add to that group those users whom you want to be able to use the SMARTBoard.

C.1.1. SmartBoard Icons for Users

Now that the SmartBoard driver has been installed and the proper permissions have been set up for the serial port, the only thing you need now is a nice little icon for your users to click on.

You need two files if you want your users to be able to start the Smartboard easily, one icon on their desktop, together with a little script centrally located in the machine. Make sure that the users who are going to use the Smartboard have this file in their `Desktop` directory in their home directory. The file should be named `Smartboard.desktop` and have this content:

```
[Desktop Entry]
Comment=Smartboard
Comment[nb]=Smartboard
Encoding=UTF-8
Exec=/usr/local/bin/smartboard.sh
```



```

GenericName=Smartboard
GenericName[nb]=Smartboard
Icon=/usr/bin/SMARTBoard/lib/pixmaps/board256.xpm
MimeType=
Name=SMartBoard
Name[nb]=SMartBoard
Path=
ServiceTypes=
SwallowExec=
SwallowTitle=Smartboard
Terminal=false
TerminalOptions=
Type=Application
X-KDE-SubstituteUID=false
X-KDE-Username=

```

You also need this script, which gets called up by `Smartboard.desktop`. If you put this script in a different location than `/usr/local/bin/smartboard.sh` you will need to change this also in `Smartboard.desktop`. This is the contents of the file `/usr/local/bin/smartboard.sh`

```

#!/bin/bash
#Save as something like /usr/local/bin/smartboard.sh
export SBOARD_INSTALL_PATH=/usr/bin/SMARTBoard

export PATH=$SBOARD_INSTALL_PATH/bin:$PATH
export BROWSER=konqueror
if [ "$LD_LIBRARY_PATH" ]; then
export LD_LIBRARY_PATH=/usr/X11R6/lib:$LD_LIBRARY_PATH:$SBOARD_INSTALL_PATH/lib
else
export LD_LIBRARY_PATH=/usr/X11R6/lib:$SBOARD_INSTALL_PATH/lib
fi

if [ "$XFILESEARCHPATH" ]; then
export XFILESEARCHPATH=/usr/X11R6/lib/locale/%L/%T/%N%S:/usr/X11R6/lib/%T/%N%S:$XFILESEARCHPATH
else
export XFILESEARCHPATH=/usr/X11R6/lib/locale/%L/%T/%N%S:/usr/X11R6/lib/%T/%N%S:$SBOARD_INSTALL_PATH
fi

eval exec /usr/bin/SMARTBoard/bin/SMARTService

```

The file `$HOME/SMARTBoard/SMARTBoardService.log` should contain useful information if your board doesn't function, mine says:

```

Board on port /dev/ttyS0 has been opened successfully.
Board on port /dev/ttyS0 hardware version: 7.29
Board on port /dev/ttyS0 check sum: 0x664B664B
Board on port /dev/ttyS0 hardware model #: 133/5

```

Appendix D. Various "Homemade" Solutions

D.1. Downloading New Versions of Skolelinux/Debian-edu CD, in a Smart Way with the Help of rsync

There are constantly new versions available of the Skolelinux/Debian-edu CD. An entire CD is about 650MB, which with a normal ADSL line takes 2-3 hours to download, even longer time with ISDN. If you want to keep up with the latest version of the Skolelinux/Debian-edu CD, you either have to download it yourself or get someone else to download it and burn it for you.

If you choose to download it yourself, there is a program that makes it possible to use as a starting point an existing CD that you have already downloaded and only download the files that are different in the newer version. In this way, you can download a new version (for example pr05) in a short time if you have the previous version (for example pr04), even using ISDN.

The command that makes this possible is

```
rsync --no-whole-file --progress -vv --stats  
developer.skolelinux.no::skolelinux-cd/debian-edu_sarge-i386-pr05.iso  
/skole/tjener/home0/iso/debian-edu_sarge-i386-pr05.iso
```

.

What happens here is that the local file

/skole/tjener/home0/iso/debian-edu_sarge-i386-pr05.iso gets "updated" so that it becomes identical with the file debian-edu_sarge-i386-pr05.iso that is stored on the Skolelinux ftp-server.

But before you do this, you have to have a local copy on your computer that you want to update. In this example, the name of the copy is debian-edu_sarge-i386-pr05.iso and it is stored in the directory /skole/tjener/home0/iso/. If your local copy is called something else and is placed in another directory, you will need to remember to take that into account when you run the rsync command.

You may be wondering why I upgrade a local file debian-edu_sarge-i386-pr05.iso with a file by the same name from Skolelinux. That's because my local file debian-edu_sarge-i386-pr05.iso is really a debian-edu_sarge-i386-pr04.iso, but with a different name.

Recipe for Upgrading with rsync

- First you have to install the package rsync, **apt-get install rsync**
- Say you have a CD with debian-edu_sarge-i386-pr04.iso, which you want to upgrade to a newer version, for example pr44.

The first thing you have to do is to copy the contents of that CD over to your hard drive. You put the CD into the CD-ROM and then **mount /cdrom**

- You can check if the CD is mounted with the command **df -h**. Look at the line

```
/dev/cdrom          692M  692M      0 100% /cdrom
```

- After that you copy the old version from the CD over to you hard drive with the command

dd if=/dev/cdrom of=/skole/tjener/home0/iso/debian-edu_sarge-i386-pr05.iso

. Replace the pr05 with the number of the new version that you want to download.

- Now all you have to do is execute the rsync command.
- If everything works the way it's supposed to do, you will see the following on the screen:

```
klaus@tjener:/skole/tjener/home0/iso$ rsync --no-whole-file
\--progress -vv --stats
\developer.skolelinux.no::skolelinux-cd/debian-edu_sarge-i386-pr05.iso
\skole/tjener/home0/iso/skolelinux-i386-pr44.iso
opening tcp connection to developer.skolelinux.no port 873
/skole/tjener/home0/iso/woody-i386-1.raw
 679182336 100%   1.96MB/s   0:05:30
rsync[1396] (receiver) heap statistics:
arena:          115288   (bytes from sbrk)
ordblks:         2     (chunks not in use)
smblocks:        0
hblks:           0     (chunks from mmap)
hblkhd:          0     (bytes from mmap)
usmblocks:       0
fsmblocks:       0
uordblks:       101336   (bytes used)
fordblks:        13952   (bytes free)
keepcost:        13904   (bytes in releasable chunk)

Number of files: 1
Number of files transferred: 1
Total file size: 679182336 bytes
Total transferred file size: 679182336 bytes
Literal data: 21512192 bytes
Matched data: 657670144 bytes
File list size: 35
Total bytes written: 248397
Total bytes read: 16827778

wrote 248397 bytes  read 16827778 bytes  42007.81 bytes/sec
total size is 679182336  speedup is 39.77
```

Warning

Make certain that you have at least 650MB free space when you download using rsync, because rsync creates a temporary file while it is downloading. This file grows and becomes equally large as the CD. When it's finished downloading, the temporary file gets deleted.

D.2. Preventing Users from Logging onto Several Thin Clients Simultaneously

This can be a real problem when a user logs onto several thin clients at the same time, for example if he tries to change the background picture in both places.

The solution is to set up a little test when a user logs on, to check if he is already logged on. If he is, then he is prevented from logging on again.

The script that makes this possible, or rather makes it impossible for one user to log on to several thin clients simultaneously is found in the file `/etc/X11/Xsession.d/10skolelinux-one-login-per-host`. You will also find instructions there as to how this script should be started. It is started by creating a so-called "flag file" with the command

```
tjener:~# touch /etc/debian-edu/limit-logins
```

D.2.1. Kicking Out a User

Sometimes it is necessary to kick a user out. This is the little script that takes care of that, `logoutkill.sh`

The script is already installed on your server, and is used in this way, to kick out the user named klaus,

```
/usr/share/debian-edu-config/tools/logoutkill.sh klaus
```

D.3. Ensuring that all Processes/Programs are Really Finished When Logging Out

It's a bit of a problem when OpenOffice.org often freezes when ending the program, even after the user has logged out. It seems as if shutting off OpenOffice by clicking on the "x" up in the right corner doesn't really do the job right. And if OpenOffice freezes that way, it may not start again when the next user logs on.

There is a way to ensure that all processes really are finished when a user logs out.

Ensuring that all Processes are Finished

- This is the script that does the job. It is already installed on your server, and is called `logoutkill.sh`
- To make sure that this script is run every time the user logs out, use a text editor to add this line

```
/usr/share/debian-edu-config/tools/logoutkill.sh $USER
```

to the file `/etc/kde3/kdm/Xreset` in such a way that it looks like this afterwards:

```
#!/bin/sh
# Xreset - run as root after session exits

# Reassign ownership of the console to root, this should disallow
# assignment of console output to any random users's xterm. See Xstartup.
#
#chown root /dev/console
#chmod 622 /dev/console
/usr/share/debian-edu-config/tools/logoutkill.sh $USER
if grep -qs '^use-sessreg' /etc/kde3/kdm/kdm.options && \
    which sessreg > /dev/null 2>&1; then
    exec sessreg -d -l "$DISPLAY" -u /var/run/utmp \
        -x /etc/kde3/kdm/Xservers "$USER"
    # NOTREACHED
fi
```

This script will make certain that all processes currently run by a user will really be terminated when he logs out, with the exception of root processes.

D.4. Placing Desktop Icons for Several Users Simultaneously

For more information about desktop icons and menus, see Chapter 10

Sometimes it can be nice for all users to have a specific desktop icon. If you have 1000 users, then it's even nicer if you can place that icon on everyone's desktop in one sweep.

All shortcuts are really a file. These files are stored in the directory `Desktop` in the user's home directory. For example, the file that represents the shortcut to the web browser Mozilla is `Mozilla_Navigator.desktop`; the contents of the file start with:

```
[Desktop Entry]
Type=Application
Exec=mozilla
Name=Mozilla Navigator
Comment=Mozilla Navigator
Icon=/usr/share/pixmaps/mozilla.xpm
```

This is where you find information about where the program is installed, what kind of icon is used, etc.

For example, if you want everyone to have the icon for OpenOffice.org on their desktop as a shortcut (the file in this case is called `textdoc.desktop`), then you have to do the following as root:

A File Distributed to All Users Simultaneously

- First you have to manually add this shortcut to the desktop of one user, for example the user "test". The shortcut will then be found in the directory `/skole/tjener/home0/test/Desktop/textdoc.desktop`.
- The next thing you do is create a script that does the following:
 1. Copies the file `textdoc.desktop` over to the `Desktop`-directory for all of your users.
 2. Ensures that the permissions for this file are correct, that is they are set up so that they are owned by the user, and not by root.

```
•
#!/bin/sh
#Saved as e.g. spread-desktop
#used as follows ./spread-desktop path-to-target.desktop
#remember to make the script executeable with chmod 755 spread-desktop
#If the users are stored somewhere other than home0, then you must
#change the variable HOMEDIRS below accordingly.
#If your home directories are in different directories on
#/skole/tjener/home0, e.g. /skole/tjener/home0/2004-A,
#then you need to add them all to HOMEDIRS using the spacebar to separate them.
#For example HOMEDIRS="/skole/tjener/home0/2004-B /skole/tjener/home0/2004-A"
#
HOMEDIRS="/skole/tjener/home0"
#
# If there is a "Desktop"-directory, then we copy into it.
copykde () {
    if [ -d $U/Desktop ]
    then
        cp -a "$FILE" $U/Desktop
        DEST=`basename \"$FILE\"`
        chown --reference=$U/ $U/Desktop/"$DEST"
    fi
}
while [ $# -gt 0 ]
```

```

do
    FILE="$1"
    if [ -f "$FILE" ]
    then
# find all folders under /home
    for H in $HOMEDIRS
    do
        USERLIST=`ls -ad $H/*`
        if [ "$USERLIST" ]
        then
# for each user
            for U in $USERLIST
            do
                copykde
            done
        fi
    done
    fi
    shift
done

```

You can save this script in the root home directory. In this example, the file `textdoc.desktop` is found under the user `test`, so the command to copy this file over to all of your uses will be:

```
./spread-desktop /skole/tjener/home0/test/Desktop/textdoc.desktop
```

Appendix E. Various Nice Little Scripts

E.1. Little Scripts

E.1.1. Remove Comment Lines

Most system files are full of comment lines, that is lines with a #-symbol in front. These are lines that the program disregards. Sometimes we aren't interested in viewing these comment lines. We only want to see the lines that work. The command **egrep -v '^#|^\$' <filename>** will filter out these comment lines when viewing the file- they won't actually be removed from the file itself.

E.1.2. Making Changes in Several Files Simultaneously

Sometimes you have the need to make the same change to several different files, for example the configuration files for your users. Either you open them one by one and use the entire day on the job, *or* you can use a nice combination of Perl and shell scripting.

The following little bit will replace every reference to kde2 with kde3 in all files that have the file type `.txt`

```
for F in *.txt; do perl -pi.bak -e 's/kde2/kde3/g' $F;done
```

What's fine about this command is that the original file is left untouched (neither written over or deleted), rather it is given an extra ending, that is, `.txt.bak`. This is nice especially when you find out that your change wasn't the right thing to do after all- but you did do a backup anyway, right? See Section 8.5.3

Appendix F. Contribute to this document and Skolelinux/Debian-edu

F.1. Translate

Once I'm done with the rewrite and crude translation to English, the tools `sgml2xml` and `poxml` will be used so that this file easily can be translated to any language

The `id=` tags in the titles will be removed when I'm done with the rewrite, they are there so that I can better organise the layout of the document, the TODO-notes will also be fixed, later.

F.2. Test Skolelinux/Debian-edu on your computer with an emulator, qemu

Get latest version from <http://fabrice.bellard.free.fr/qemu/>, at the time of writing that is 0.8.0

Unpack, and create a disk that is big enough,

```
qemu-img create /mnt/qemu.disk 6000
```

This will create a 6GB disk; the funny thing is that this size is not "real" before you start filling it up inside qemu. That means you can actually create a bigger qemu-disk than your physical disk. Before you create the qemu-disk, you can check your available space with **df -h** and do the same after you have created a 6GB qemu-disk, you will see the same space is available. The space is not used before you start installing something into qemu- very nice!

Either download a iso-image to you harddrive, or use a real cdrom.

```
qemu -m 128 -boot d -cdrom /tmp/debian-edu_sarge-i386-pr05.iso -hda /mnt/qemu.disk -monitor  
stdio
```

which will start a Skolelinux/Debian-edu install with 128MB ram onto qemu-disk `/mnt/qemu.disk`, if you are going to try a Thinclient install, you will need two network cards in your qemu, add the option **-nics 2**, like this

```
qemu -m 128 -boot d -cdrom /tmp/debian-edu_sarge-i386-pr05.iso -hda /mnt/qemu.disk -monitor  
stdio -nics 2
```

Once you are done with firststage in qemu, you need to start secondstage with

qemu -m 128 -cdrom /tmp/debian-edu_sarge-i386-pr05.iso -hda /tmp/qemu.disk

otherwise, it will not boot from the hard drive, but from the CD-ROM again.

If you wish to use a real cdrom, then the command looks like thins

qemu -m 128 -boot d -cdrom /dev/hdc -hda /mnt/qemu.disk -monitor stdio -nics 2

Appendix G. To-do list

1. Installing FreeNX
2. Adding info about using ssh into a qemu-image
3. Adding info about booting ltsp-client in qemu
4. Allowing some users to change password in ldap of other users
5. kpackage as gui-tool for managing packages
6. Make usbstick work on thinclients
7. *Maybe* make floppy work on thinclients
8. Make sound work on thinclients
9. Documenting setting up a mail client, connecting to postoffice
10. More on the different services of webmin
11. More on bind/DNS
12. Adding a printer via kprint, print:/
13. Add a section on installing via netboot
14. Should have new-glossary list in each chapter/section
15. Installing Skolelinux/Debian-edu on Fujitsu Siemens SATA based Econell150 and Econell200, using Linux software raid
16. Installing Skolelinux/Debian-edu on Fujitsu Siemens SCSI based Primergy TX150, TX200, RX300 including monitoring of onboard raid.
17. Using digital camera